

Protege SE Integrated System Controller Installation Manual

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1 Introduction

Thank you for purchasing the Protege SE Integrated System Controller by ICT. The Protege System is an advanced technology security system designed to provide integration with building automation, apartment complex control and HVAC in one flexible package. Communication is over a proprietary high speed protocol across an encrypted local area network and AES Encrypted Proprietary RS-485 module network. Using modular-based hardware design, system installers have the flexibility to accommodate any installation whether it's small, large, residential or commercial.

The Controller is the central processing unit of the Protege System. The Controller communicates with all system modules, stores all configuration and transaction information, processes all system communication, and reports alarms and system activity to a monitoring station or remote computer.

Flexible module network architecture allows large numbers of modules to be connected to the RS-485 Module Network. Up to 250 modules can be connected to the Protege System in any combination to the network up to a distance of 900M (3000ft). Communication beyond this distance requires the use of a RS-485 Network Extender

The current features of the Protege SE Integrated System Controller include:

- Internal industry standard 10/100 Ethernet
- 32 Bit advanced RISC processor with 2MB RAM and 4MB flash
- 16 high security monitored zone inputs
- NIST Certified AES 128, 192 and 256 Bit Encryption

When receiving this product you should find the kit contains the items listed below. If you do not have the correct contents, please contact your distributor immediately.

- Protege SE Integrated System Controller
- Protege SE Integrated System Controller Quick Start Guide
- 6 nylon spacers
- 36 1K ohm resistors
- Red/black battery backup wires
- 2 Diode 1N4007 1A 400V (Axial)

For more information on the Protege SE Integrated System Controller and other Integrated Control Technology products please visit the ICT website (<http://www.incontrol.co.nz>).

1.1 Document Conventions

This document uses the following conventions:



Important warnings or cautionary messages to prevent equipment damage, data loss, or other similar conditions



Notes with additional information such as an explanation, a comment, or a clarification about the subject



Tips containing practical information that may help you solve a problem or describing actions that may save you time



Information relating to UL and ULC compliance

[TEXT]

Bold text enclosed in brackets is used to show a section number or address of a programmable option or information on programming shortcut sequences

2 Installation Requirements

This equipment is to be installed in accordance with:

- The Product installation instructions
- UL 681 - Installation and Classification of Burglar and Holdup Systems
- UL 827 - Central-Station Alarm Services
- CAN/ULC-S301, Central and Monitoring Station Burglar Alarm Systems
- CAN/ULC-S302, Installation and Classification of Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults
- CAN/ULC-S561, Installation and Services for Fire Signal Receiving Centres and Systems
- The National Electrical Code, ANSI/NFPA 70
- The Canadian Electrical Code, Part I, CSA C22.1
- The Local Authority Having Jurisdiction (AHJ)

3 Mounting

The Protege Controller is supplied as a PCB only (printed circuit board). We recommend that gear plate style enclosures are used wherever possible, as this provides the best mounting and installation solution as well as the required cable entry and termination space.

When installing the Controller ensure that there is adequate clearance around all sides of the cabinet enclosure and air flow to the vents of the enclosure are not restricted.

It is recommended the Controller is installed in a location that will facilitate easy access for wiring. It is also recommended that the Controller be installed in electrical rooms, communication equipment rooms, closets or in an accessible area of the ceiling.

Step 1

Insert the plastic standoffs into the locations to mount the PCB board.

Step 2

Calculate the location and position of the cabinet enclosure and mark the holes for the keyhole points in the top left and right locations. This will enable you to fasten the screws and then hang the box on them adjusting the location to suit.

Step 3

Ensure a solid fixing point and fasten the two screws. Before tightening the top screws, insert the tamper bracket in the slot provided on the right side of the cabinet enclosure.

Step 4

Fix the cabinet enclosure securely using the remaining mounting holes on the bottom left, right and centre of the cabinet enclosure.

Step 5

If you are extending the Protege Controller by the addition of a communications module or memory interface, insert the 4 extended nylon standoffs through the rear of the Controller.

Step 6

Insert the PCB into the cabinet enclosure and mount using the plastic standoffs inserted during step 1.



To reduce the risk of damage caused by debris during the installation, install the cabinet enclosure when the circuit board is not installed on the plastic standoffs.

3.1 UL/ULC Installation Cabinet Options

UL/ULC Central Station Fire Monitoring, Central Station Alarm Installations

Cabinet Model	Manufacturer	UL/ULC Installation Listings
D8108A	Bosch	UL1610, UL1635, ULC-S304, ULC-S559

Electronic Access Control System Installations

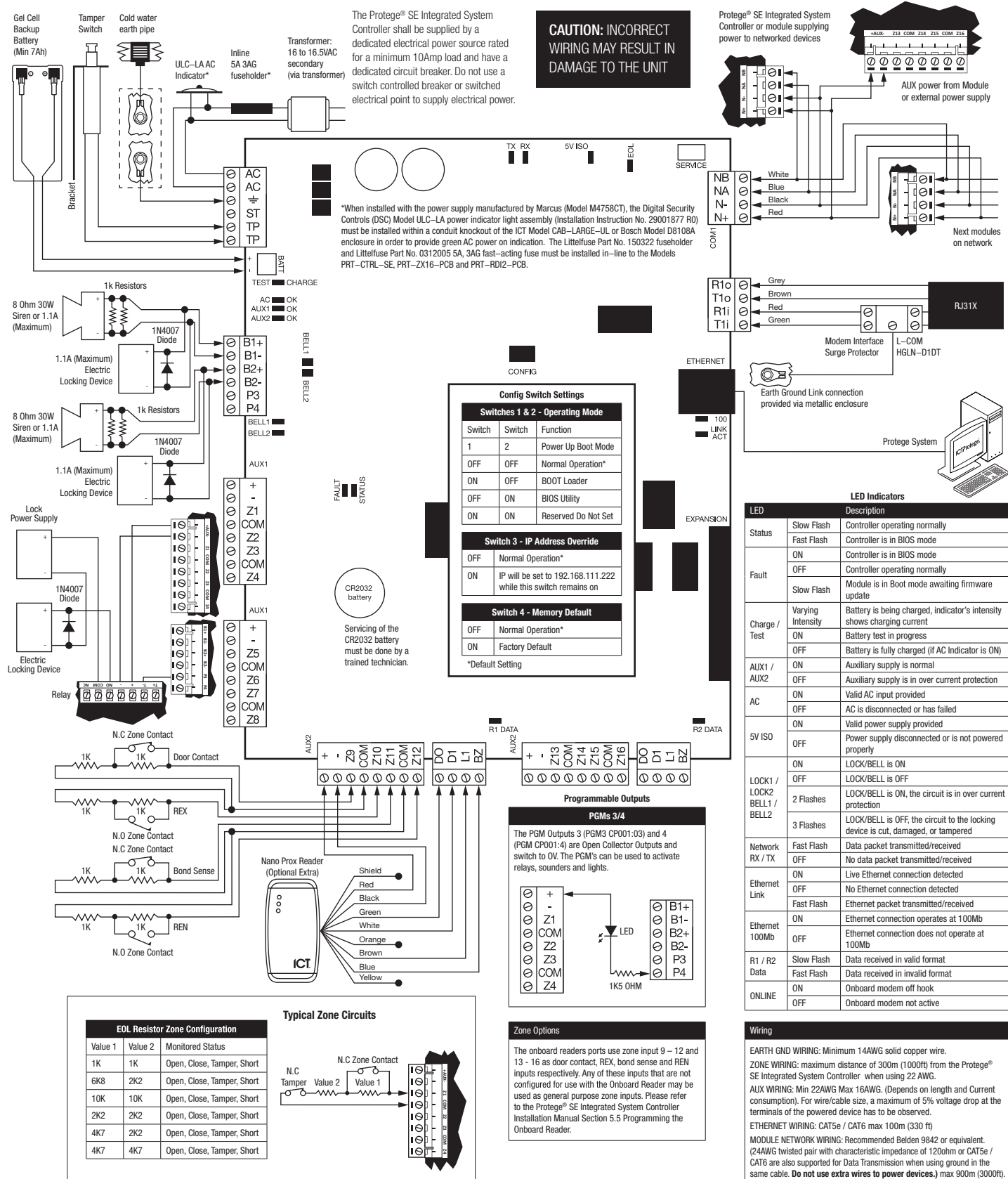


All cabinet installations of this type must be located **inside the Protected Area**.

Cabinet Model	Manufacturer	UL/ULC Installation Listings
CAB-LARGE-UL	ICT	UL294, CAN/ULC-S319
D8108A	Bosch	UL294, CAN/ULC-S319

4 Connections

4.1 Protege SE Integrated System Controller Connection



4.2 Wiring

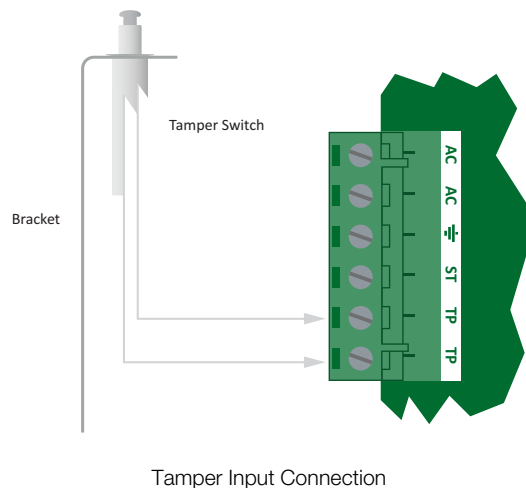


CAUTION: Incorrect wiring may result in damage to the unit.

- All output circuits comply with the requirements for inherent power limitation and are Class 2 except the battery wires and AC wires which are not power limited.
- A minimum of 1/4" (6.35mm) physical separation must be respected between power limited and non power limited wiring (Battery Wires and AC Wires).
- Do not route any wiring over circuit board. Maintain at least 25.4mm (1") separation.
- The connection to the mains supply must be made as per local authorities rules and regulations.

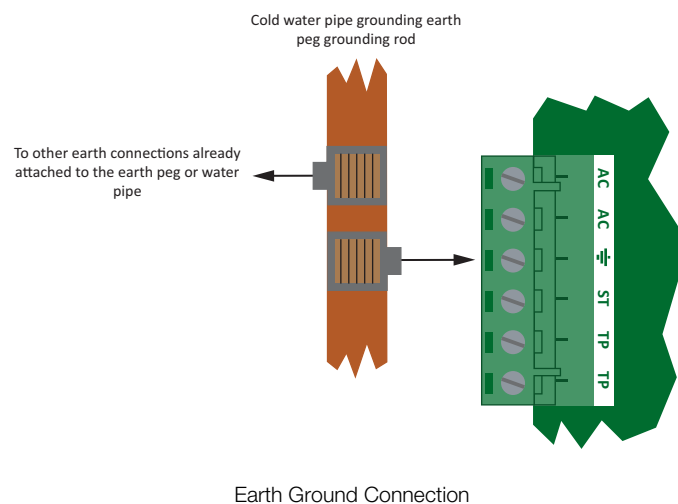
4.3 Cabinet Enclosure Tamper Switch

The cabinet enclosure tamper input sends a signal to the monitoring station or remote computer when the cabinet enclosure has been opened. The tamper input switch shall be mounted into the steel bracket provided and connected to the tamper connection terminals as shown below.



4.4 Earth Ground Connection

The Controller has a connection for earth ground. For best results, a cold water pipe should be used with a pipe wiring clamp. If a cold water pipe is not available, connect to a suitable ground connection in the installation. A minimum 14AWG solid copper wire shall be used from the Controller's earth connection point to the clamp on the cold water pipe. If other earth clamps are present at the same connection point, connect the clamp below the existing units.



4.5 AC Power

The Protege Controller shall be supplied by a dedicated electrical power source rated for a minimum 10Amp load and have a dedicated circuit breaker. Do not use a switch controlled breaker or a switched electrical point to supply electrical power. Connect the primary (120VAC) of a 16 to 16.5 VAC, 60Hz, 40VA or 100VA transformer (refer to the table below) to the electrical circuit and run the secondary (16 to 16.5VAC) to the AC Input on the Controller terminals.



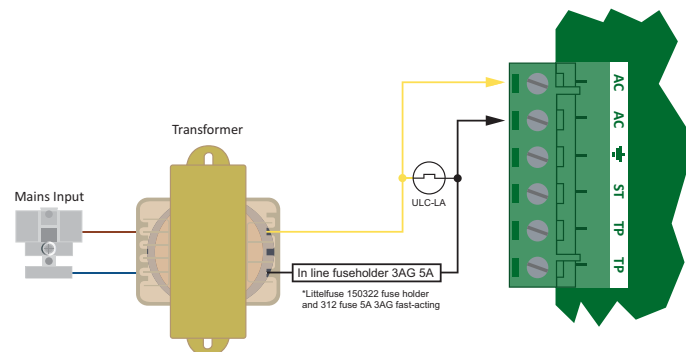
The following table outlines the transformers that shall be used in order to comply with UL and ULC installation standards.

When installed with the power supply manufactured by Marcus, Model M4758CT:

- the Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
- the Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

For ULC Central Station Fire Monitoring installations, a hardwired connection type transformer is required. Check with the local authority.

Transformer	Manufacturer	Transformer Type	Specification
TRI-PIT 1640C	Solex	PLUG IN Transformer	16.5VAC 40VA
NE-TP4016L	National Electronics	PLUG IN Transformer	16.5VAC 40VA
GF-4016L	GFX	PLUG IN Transformer	16.5VAC 40VA
M4758CT	MARCUS	HARDWIRE Transformer (requires Class 1 120VAC input)	16VAC 100VA



AC Power Connection

Specific regional regulations may allow the transformer to be mounted inside the cabinet enclosure. In this case wire the electrical circuit to the electrical termination point inside the cabinet enclosure and the secondary wires of the transformer to the AC Input on the Controller. The earth wire shall be routed to the terminal on the Controller when using an internal transformer.



Warning:

- This installation should be made by qualified service personnel and should conform to all local codes and in accordance with the National Electrical Codes (NEC US) or the Canadian Electrical Codes (CEC Canada).
- Termination of wiring to the Controller while power is applied or the battery is connected may cause serious damage to the Controller and will VOID ALL WARRANTIES OR GUARANTEES. Power the unit only after all wiring, configuration and jumper settings are completed.
- Extra care must be taken when wiring the AC inputs. Improper connection will cause permanent damage to the Controller.

4.6 Battery Backup

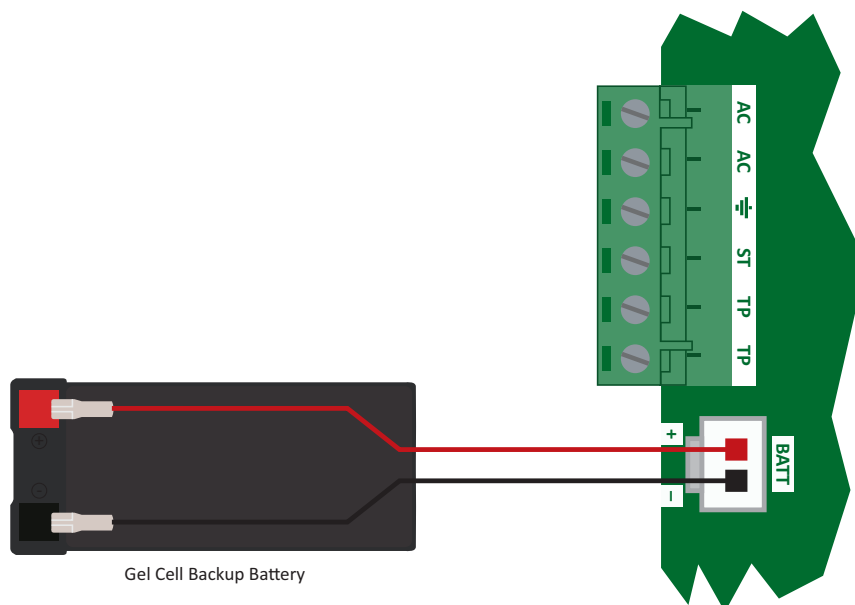
It is recommended that a minimum of a 7Ah battery is used as the main battery backup. From the accessory bag provided, connect the battery housing connector to the battery connector on the Controller. Connect the spade terminals to the battery as shown in the diagram below. Connection of the battery in reverse will not damage the Controller but will cause the electronic battery fuse (5A fast blow) to open. Prolonged reverse connection can cause damage to the Controller.



Please refer to the section Maximum Total Output Current : UL and ULC Installations for specific requirements on complying with UL and ULC installation standards.

Servicing of the battery circuit and replacement of lithium battery must be done by a trained technician.

Follow battery manufacturer instructions for installation, testing and maintenance.



Battery Connection

The battery test procedure uses a special algorithm to prevent deep discharge and increase battery endurance. A dynamic battery test is performed every ten minutes (default) when AC power is present. A battery trouble zone alarm will be generated if the battery is either disconnected or shows poor capacity. Battery fault conditions will activate the battery trouble zone.

If AC is not present, the Controller will monitor the battery for a low voltage level and will activate the battery trouble zone. The next dynamic battery test will occur 30 minutes after AC power has been restored. This delay allows the battery to achieve optimal charging during the first 30 minutes that power has been restored to the unit. Once the first test is completed the dynamic testing will return to the programmed value (default 10 minutes).

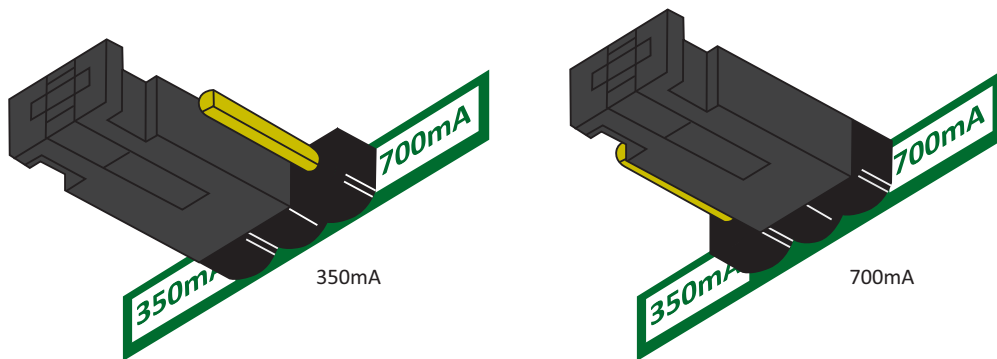
When power is first applied to the Controller, a dynamic battery test will be performed after 30 seconds. This allows the status and condition of the battery to be detected. On completion of this first test, the default testing period of 10 minutes will be resumed. This is a programmable setting in the Controller panel options. The test period can be changed as required by setting the battery test time in the Controller Configuration Menu.



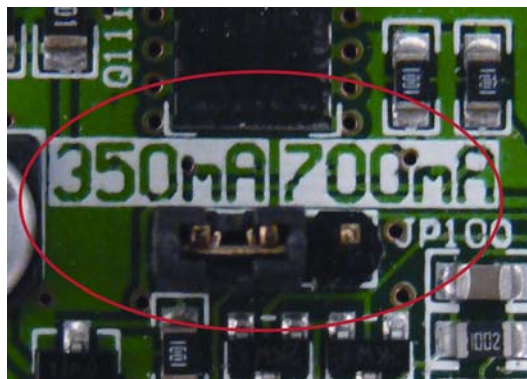
Warning: Only attach standard lead acid batteries. Do not connect the battery wires or battery housing connector of the Controller to any other ancillary device (siren, lock or mag clamp etc). Connection may cause erroneous faults or serious damage to the Controller and will VOID ALL WARRANTIES OR GUARANTEES.

4.7 Battery Charge Current Setting

To configure the Controller manually for the charge current, select the appropriate battery current limit setting using the jumpers as shown below.



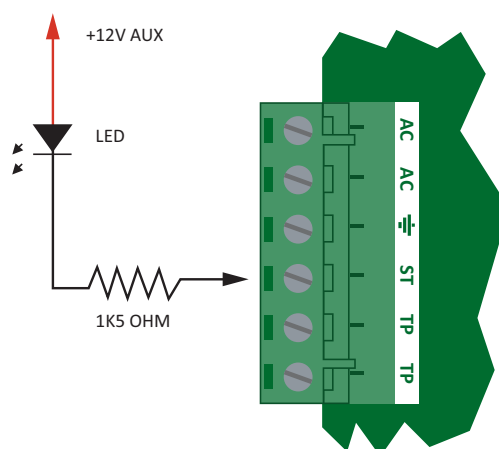
Battery Charge Jumper



Jumper Location

4.8 Status Indicator

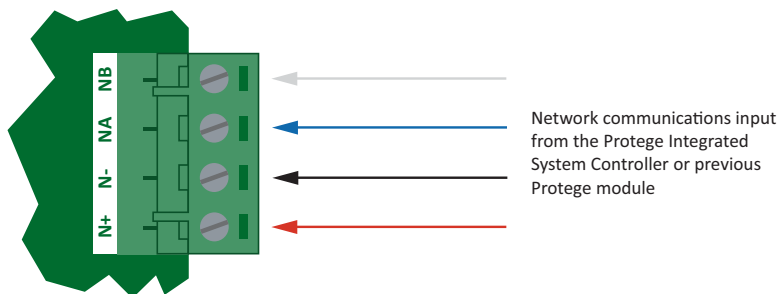
The status output will activate according to the status indicator on the Controller and can be used to provide signalling or indication of the Controller status outside the enclosure. The following diagrams show the connection of an LED indicator to the status output.



External Status LED Connection

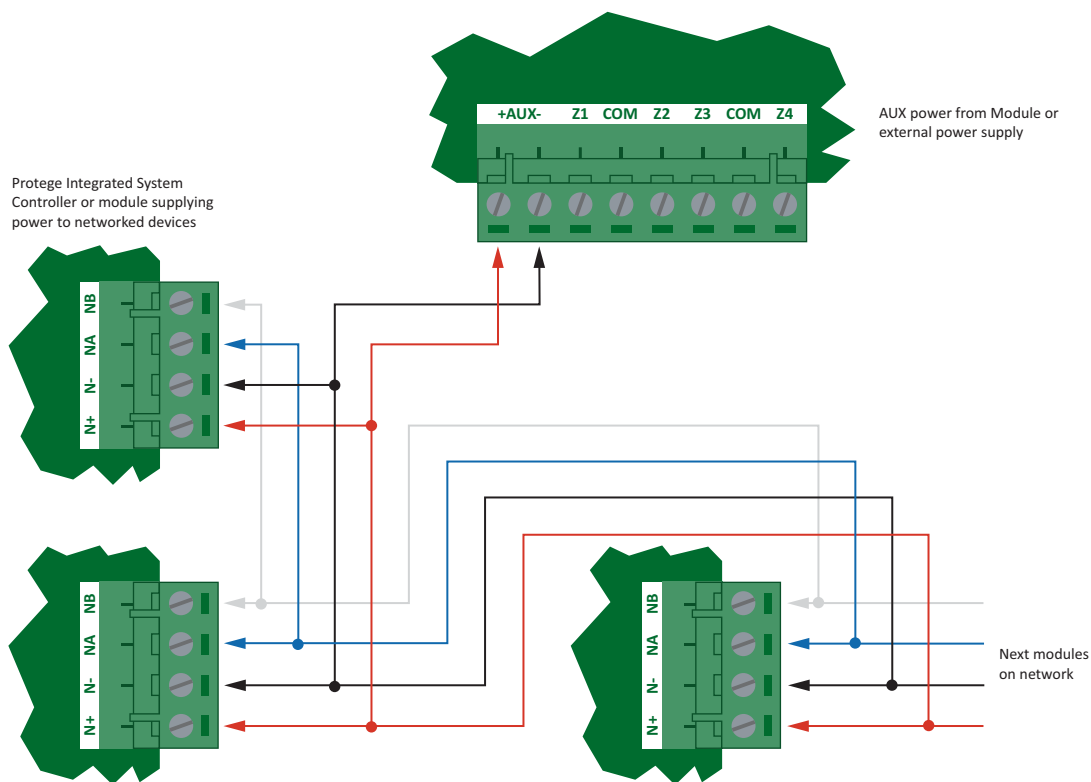
4.9 Encrypted Module Network

The Controller incorporates technically advanced encrypted RS-485 communications technology. The isolated communications interface offers full galvanic isolation to prevent ground loop noise and cross phase ground differential. The communication offers superior interference immunity. Connection of the communications shall be performed according to the following diagram.



Standard Communication Connection

Always connect the Controller's NA and NB terminals to the NA and NB terminals of the expansion devices and keypads. The N+ and N- must go to a 12V power supply source as shown below.



Network Power Connection

The above diagram shows a power connection taken from the auxiliary power outputs on the Controller's zone terminals.

This connection is suitable for smaller systems provided that the:

- Maximum total output current,
- AUX DC output current,
- B1/B2 DC output current, and
- Total combined current

are ALL lower or equal to the values outlined in the Technical Specifications section. If these currents are exceeded, a separate power supply shall be used.



If an external power supply is required, a UL 603 or UL 294 listed power-limited power supply must be used to comply with UL installation standards, and a CAN/ULC-S318 or CAN/ULC-S319 listed power-limited power supply must be used to comply with ULC installation standards.



Warning: The 12V N+ and N- communication input must be supplied from only one point. Connections from more than one 12V supply may cause failure or damage to the units supplying power.

The recommended module network wiring specifications are:

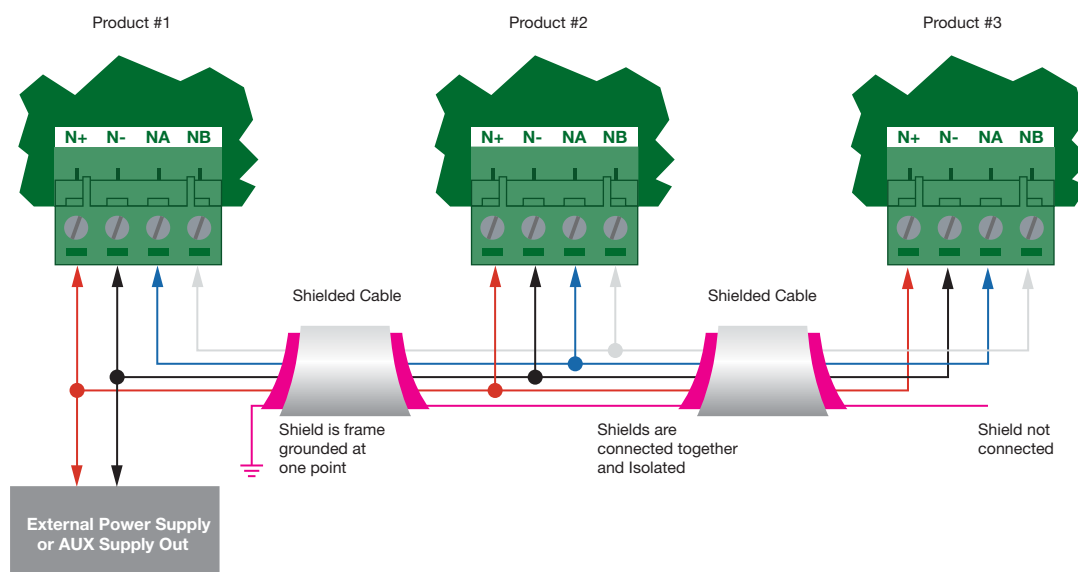
- CAT5e / CAT6 are also supported for data transmission when using ground in the same cable.
- 24AWG twisted pair with characteristic impedance of 120ohm
- Belden 9842 or equivalent.
- Maximum total length of cable is max 900m (3000ft)



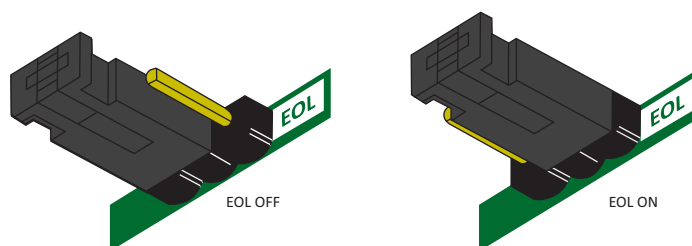
Warning: Unused wires in the cable must not be used to carry power to other devices.

Shielded Cables

- Shielded cables can be used in noisy environments (with RF and electromagnetic interference).
- If a shielded cable is used, the shield must be connected at only one end of the cable. DO NOT connect a shield at both ends. Refer to the following diagram for the recommended shield connection.



Recommended Shield Connection



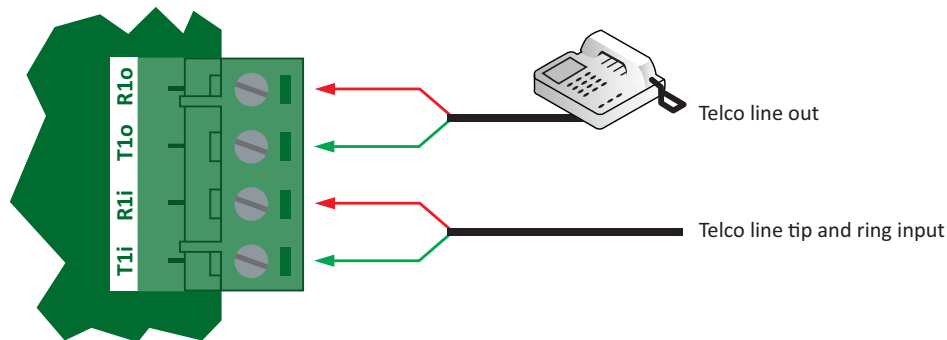
EOL Jumper



The EOL (End Of Line) jumper setting must be set in the on position for the first and last expansion device only.

4.10 Telephone Dialer

The Controller provides the ability to communicate alarms and upload/download information with remote systems using the onboard 2400bps modem. The telephone line can be connected directly to the Controller using the onboard telephone connection terminals.



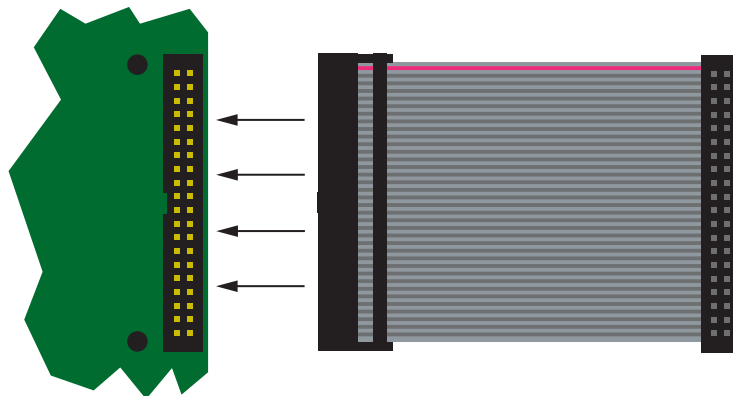
Telephone Line Connection



For UL/ULC installations, a Modem Surge Protection Interface must be used.

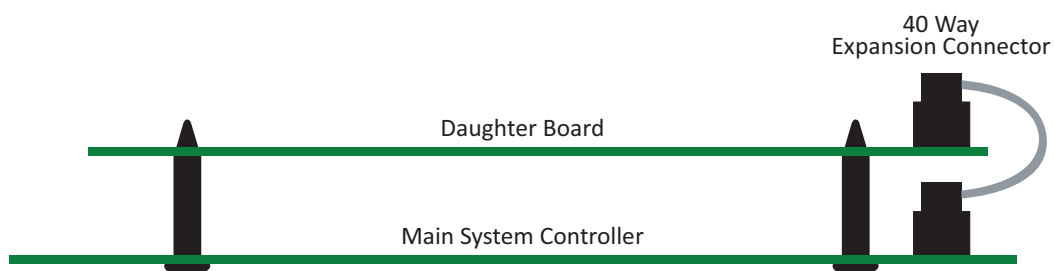
4.11 Expansion Connector

The Controller has an onboard expansion connector that is used to connect serial communication, memory and special function interface devices. Connect the interface card to the Controller as shown in the following diagrams. For configuration information, refer to the Protege Reference Manual and the installation instructions provided with the interface device.



Expansion Connector and Mounting Hole Location

When installing the daughter board, ensure that the plastic mounting hardware provided is correctly inserted from the rear of the Controller. Pay attention to the key location of the 40 Way connector.



Connection and Mounting



Warning: Power to the Protege System Controller must be turned off when connecting any hardware or system device to the Controller. Failure to do so may damage the Protege System Controller and expansion device.



If the Protege System Controller is used with the expansion connector fitted, the second onboard reader port becomes unavailable.



40 Way expansion connector communication has not been evaluated by UL/ULC.

4.12 Ethernet 10/100 Network Interface

The communication between the Protege System and the Controller uses a 10/100 Ethernet network operating the TCP/IP protocol suite. The IP address of the Controller can be configured using the LCD Keypad Terminal. The default IP address is set to a static IP address of 192.168.1.2 with a subnet mask of 255.255.255.0. These IP address settings are commonly used for internal networks.

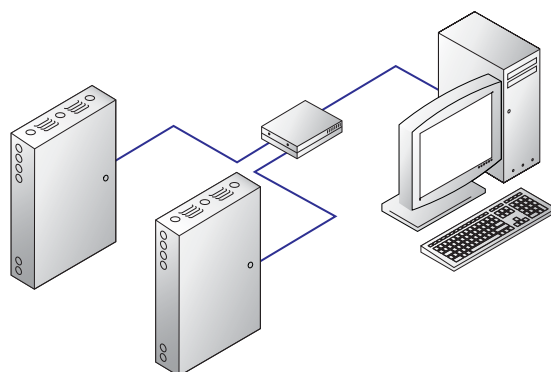


Installing the Protege System Controller on an active network requires knowledge of the configuration and structure for the network. Always consult the network or system administrator and ask them to provide you with a fixed IP address that can be assigned to the Protege System Controller.



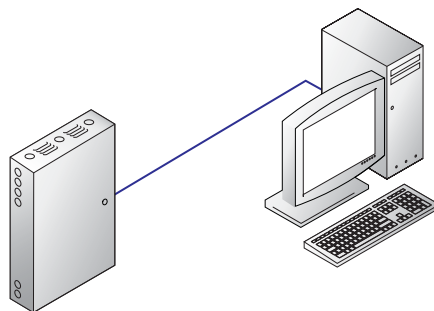
When the IP address has previously been set and is not known you are able to set configuration DIP switch 3 which on power-up of the Protege System Controller will configure the IP address to 192.168.111.222. This will allow access to the configuration utility to change or review the programmed IP Address.

When installing an Ethernet connection the Protege System Controller shall be interfaced using a standard segment (<100m in length) and shall be connected to a suitable Ethernet hub or switch.



Ethernet 10/100 Switch hub Connection

Temporary direct connections can be used for onsite programming by connecting directly to the computer Ethernet port.



Ethernet 10/100 Direct Connection



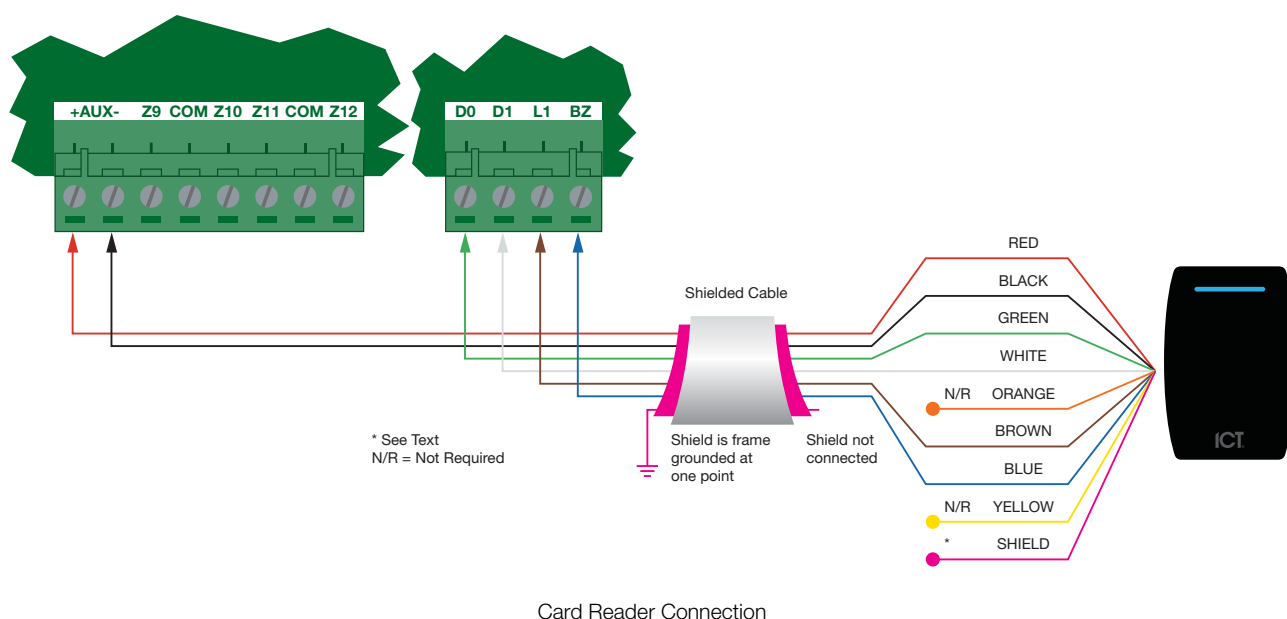
- All network equipment such as hub/router/gateway used with the Protege System Controller must comply with the UL and ULC standard requirements associated with a signal receiving center.
- The Protege System Controller must be installed in the same room as the network equipment that provides it the network connection.

5 Door Access Control

The Controller provides access control functionality onboard without the requirement for additional hardware. With 2 access controlled doors built in, the flexibility of the Protege system is expanded even further. The Controller allows the connection of 2 Wiegand devices to control 2 doors (entry or exit only) or can be configured in multiplex mode to allow 4 Wiegand devices controlling 2 doors giving the flexibility of entry and exit readers.

5.1 Card Reader Connection

The following diagram shows the connection of a standard Wiegand Reader with the Controller controlling an access door in entry or exit mode (2 doors, 2 readers).



The card reader must be connected to the Controller port using a shielded cable. Always refer to the card reader manufacturer for detailed installation guidelines. The shield connection must only be connected at one end of the cable in the metallic enclosure (frame grounded). The beeper output on the Controller provides diagnostic information to the end user and installer when access is denied or the unit is operating offline.



Warning:

- Do not connect the shield to a AUX- or 0V connection.
- Do not join the shield and black wires at the reading device.
- Do not connect the shield to any shield used for isolated communication.



- If the Controller is used with the expansion connector fitted, the second onboard reader port becomes unavailable.
- The Controller does not support dual LED reader mode and readers must be configured for single LED mode. Refer to your card reader documentation for further details.

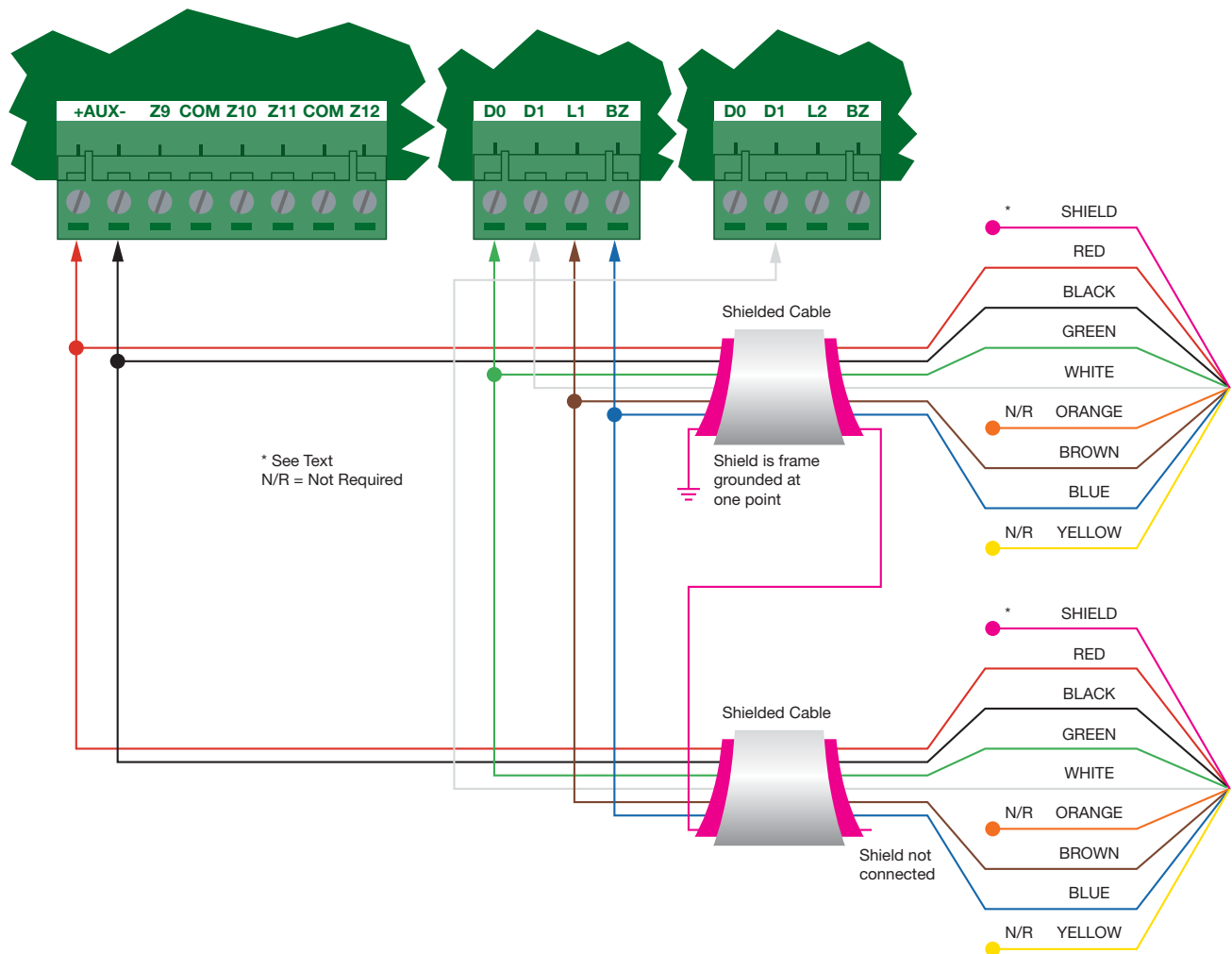


Compatible access control card reader communication formats are: 26-, 34-, 37-Bit Wiegand, RS-232, RS-485, and Smart RS-485.

5.2 Multiple Wiegand Card Reader Connection

When operating the Controller in multiple reader mode, the Controller allows the connection of 4 Wiegand reading devices controlling two doors each with entry/exit readers.

When connecting Wiegand readers in multiple reader mode, the secondary reader that is connected will have all connections wired to the same port as the primary card reader with the DATA 1 connection wired to the opposite reader connection DATA 1 input.



Multiple Wiegand Card Reader Connection

The card reader must be connected to the Controller port using a shielded cable. Always refer to the card reader manufacturer for detailed installation guidelines. The shield connection must only be connected at one end of the cable in the metallic enclosure (frame grounded). The beeper output on the Controller provides diagnostic information to the end user and installer when access is denied or the unit is operating offline. The reader that is multiplexed into the alternate reader port will operate as the exit reader and the normal reader connection shall be programmed to operate as the entry reader.

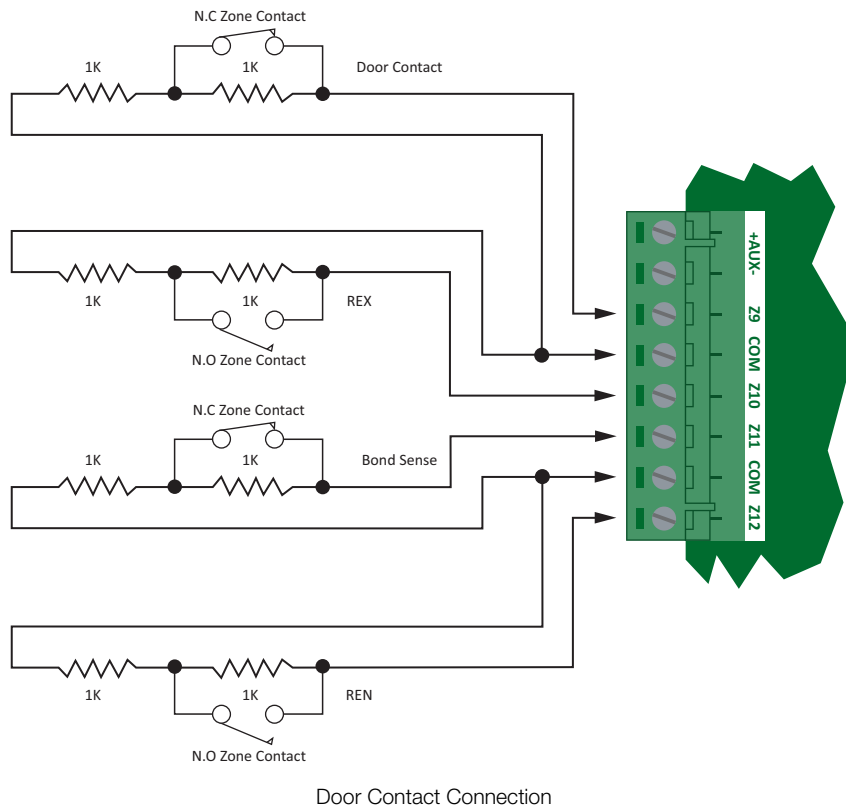


Warning:

- Do not connect the shield to a AUX- or 0V connection.
- Do not join the shield and black wires at the reading device.
- Do not connect the shield to any shield used for isolated communication.

5.3 Door Contact Connection

The Controller allows the connection of up to 4 contacts for monitoring and controlling access control doors. Each zone on the reader expander can be used for the door function that is automatically assigned and as a normal zone input on the system. The following example shows the connection of a normally closed door position monitoring contact to monitor the Open, Closed, Forced and Alarm conditions of the door.



The zones 9-12 and 13-16 can operate as either general purpose zone inputs or as onboard reader inputs. If used as general purpose zone inputs, make sure that these inputs are not defined in the onboard reader set up.

Zone	Access Control Function	Default Setting
Zone 9	Door Contact, Port 1	Door Contact, Port 1
Zone 10	REX Input, Port 1	REX Input, Port 1
Zone 11	Bond Sense, Port 1	General Purpose Zone
Zone 12	REN Input, Port 1	General Purpose Zone
Zone 13	Door Contact, Port 2	Door Contact, Port 2
Zone 14	REX Input, Port 2	REX Input, Port 2
Zone 15	Bond Sense, Port 2	General Purpose Zone
Zone 16	REN Input, Port 2	General Purpose Zone



When zone inputs are configured as bond sense and/or general purpose zones (access control and burglar installations), remaining zone inputs cannot be used for fire.

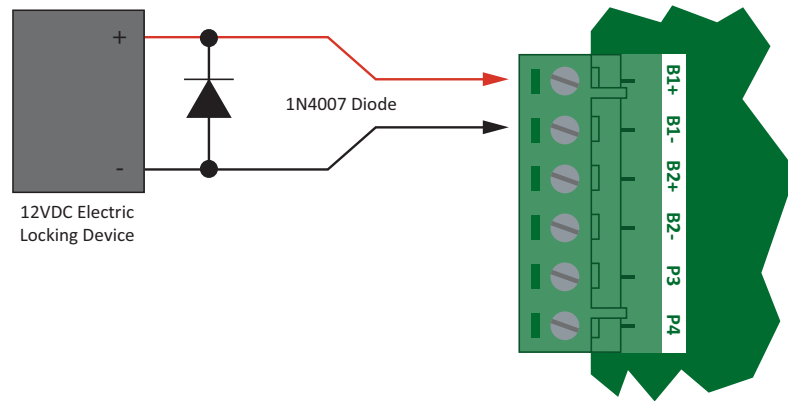


When connected, the REX Input can be programmed to operate regardless of the door contact state. The REX input can also be programmed to recycle the door alarm time to prevent nuisance alarms when the door is held open to permit longer entry.

5.4 Lock Output Connection

The Controller provides a connection for 2 electric strike locks with full monitoring of the lock circuit for tamper and over current/fuse blown conditions. The door lock monitoring can be disabled if it is not required.

Lock outputs are shared with the bell/siren functions as shown in the diagram below. You can select another output for the lock control (P3 or P4) if the bell/siren function is required. To use the lock outputs in conjunction with the onboard reader module, the Lock PGM for the door associated with the reader port must be configured to be the desired lock output on the controller. This is not configured by default.



Lock Output Connection

When using a door with an Entry and Exit Reader, the lock output shall be connected to Bell 1, and enable the swap lock option for the second reader input to allow the reader LEDs to display the correct status.



The total combined current must not exceed 2.5A or electronic shutdown will be engaged. Ensure the devices connected to the outputs are within the limits as detailed in the Technical Specifications.

5.5 Programming the Onboard Reader

The onboard reader is programmed in exactly the same way as any other reader module is. It can be thought of as if it were a normal reader expander module on a separate circuit board. By default the onboard reader is registered as the last reader in the defined profile (which is Reader Expander 008 in the Standard profile). Consequently any reader expander module that is connected with the same address as this will be treated as a duplicate and will fail to register. To change the address at which the onboard reader is registered, or to disable it, please refer to the Controller Programming Guide.

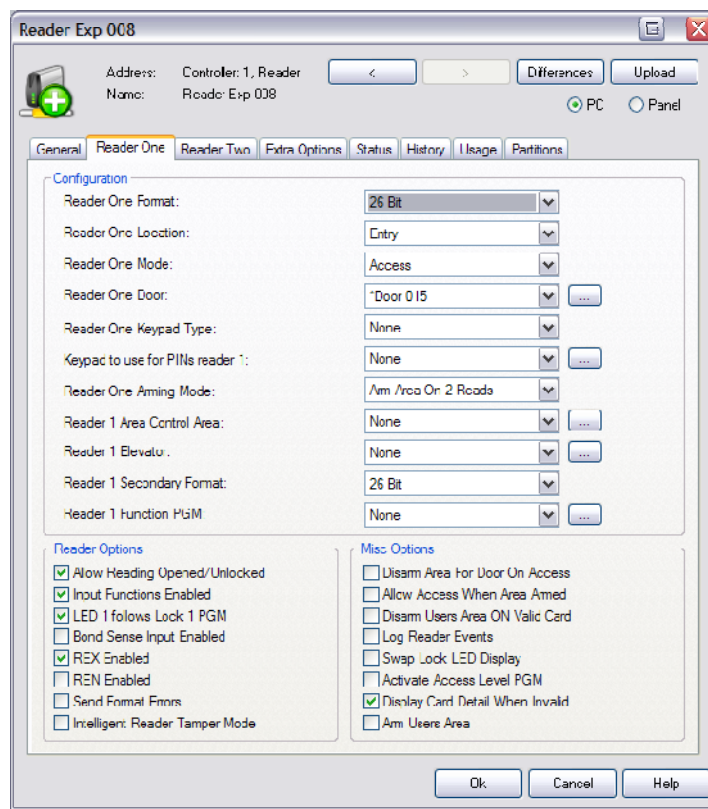
The onboard reader uses zone inputs 9-12 and 13-16 as its door contact, REX, bond sense and REN inputs respectively. Any of these inputs that are not configured for use with the onboard reader may be used as general purpose zone inputs. To use these inputs as controller zones, you will need to disable the associated function input in the Controller | Modules | Reader Modules section of the Protege Software Management Suite. Alternatively, these can be disabled from the keypad by logging in as an installer and selecting Menu, 4, 1, 4, RD004.



REX and REN devices must be Listed to UL 294 for UL installations and CAN/ULC-S319 for ULC installations, and be compatible with the system.

The default settings are shown in the following table:

Zone	Access Control Function	Default Setting
Zone 9	Door Contact, Port 1	Door Contact, Port 1
Zone 10	REX Input, Port 1	REX Input, Port 1
Zone 11	Bond Sense, Port 1	General Purpose Zone
Zone 12	REN Input, Port 1	General Purpose Zone
Zone 13	Door Contact, Port 2	Door Contact, Port 2
Zone 14	REX Input, Port 2	REX Input, Port 2
Zone 15	Bond Sense, Port 2	General Purpose Zone
Zone 16	REN Input, Port 2	General Purpose Zone



Reader Expander Properties

6 Inputs

6.1 Zones

The Controller has 16 zone inputs. The Controller also monitors 64 trouble zones used to report trouble conditions. A trouble zone represents a trouble condition within the system. The trouble zone will open or go in to alarm when that trouble condition is present, and close or return to normal when the trouble condition restores. As an example, trouble zone CP001:01 will open or go in to alarm when the tamper input on the Controller is open.

The Controller can monitor and control thousands of zone and trouble zone inputs by using the expansion modules.

The Controller can monitor the state of up to 16 zone inputs such as magnetic contacts, motion detectors and temperature sensors. Devices connected to these zones can be installed to a maximum distance of 300m (1000ft) from the Controller when using 22 AWG. The Controller supports normally opened and normally closed configurations with or without EOL resistors.

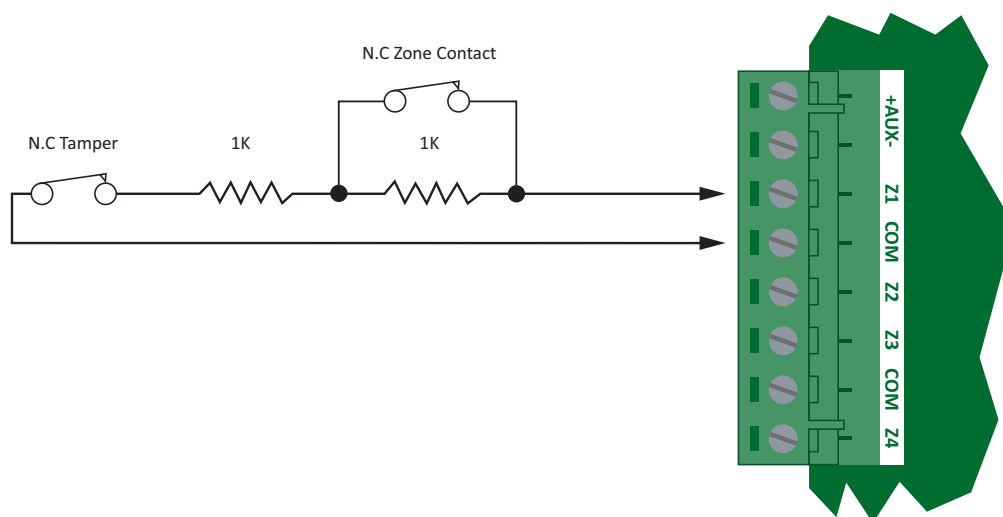


- Magnetic contacts shall be listed to UL 634 to comply with UL installation standards and ULC/ORD-C634 to comply with ULC installation standards.
- Motion detectors and temperature sensors shall be listed to UL 639 to comply with UL installation standards and ULC-S306 to comply with ULC installation standards.
- The PRT-CTRL-SE has been evaluated for UL 294, UL 1610, UL 1635, CAN/ULC-S304, CAN/ULC-S319 and CAN/ULC-S559.

Zones can be programmed from the Protege Alphanumeric LCD Keypad (PRT-KLCD) or using the Protege System Management Suite application (PRT-SMGT). CP001:01 to CP001:16 represent zone 1 to zone 16 on the Controller.

When using a zone with the EOL resistor configuration, the Controller generates an alarm condition when the state of a zone is toggled and generates a tamper alarm condition when a wire fault (short circuit) or a cut (tampered) in the line occurs.

Zones default to require the EOL resistor configuration.



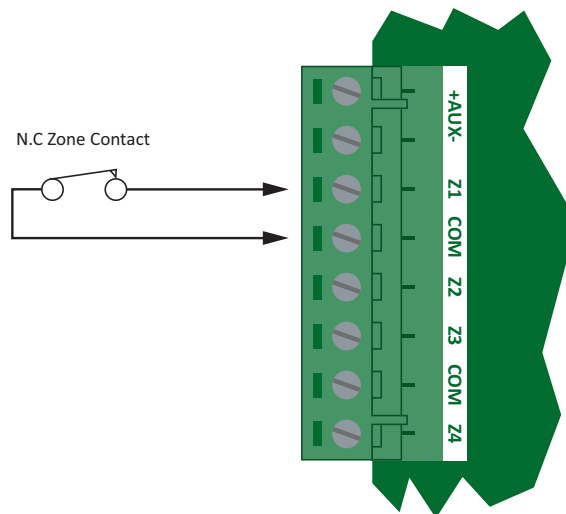
EOL Resistor Zone Configuration



The zones 9-12 and 13-16 can operate as either general purpose zone inputs or as onboard reader inputs. If used as general purpose zone inputs then make sure that these inputs are not defined in the onboard reader set up.

Each zone input can use a different input configuration. To program a large number of zones with a certain configuration use the multiple selection feature in the Protege System Management Suite application.

When using the No Resistor configuration, the Controller only monitors the opened and closed state of the connected input device generating the alarm and seal conditions.



No EOL Resistor Zone Configuration

6.2 Resistor Value Options

When using the EOL resistor configuration, the EOL resistor option must be configured based on the site requirements. Note that not all resistor options are supported on all Protege field modules. (Refer to Zones Section in the Protege Reference Manual).

Value 1	Value 2	Monitored Status
1K	-	Open, Closed
<5K7	-	Open, Closed
No Resistors	-	Open, Closed
1K	1K	Open, Closed, Tamper, Short
6K8	2K2	Open, Closed, Tamper, Short
10K	10K	Open, Closed, Tamper, Short
2K2	2K2	Open, Closed, Tamper, Short
4K7	2K2	Open, Closed, Tamper, Short
4K7	4K7	Open, Closed, Tamper, Short

6.3 Trouble Zones

Each Controller can monitor up to 64 local trouble zones. Trouble zones are used to monitor the status of the Controller and in most cases are not physically connected to an external zone. For example, trouble zone CP001:03 is used to monitor the Controller's backup battery voltage and warn the Controller that the battery is disconnected or voltage is too low. This can then be used to report a message to a monitoring station, remote computer, keypad or siren.

The following table details the trouble zones that are configured in the Controller. The trouble type and group define the trouble that is generated by the trouble zone when it is activated.

Zone Number	Description	Type	Group
CP001:01	Module Tamper	System Tamper	System
CP001:02	AC Failure	Power Fault	General
CP001:03	Low Battery	Power Fault	General
CP001:04	Real Time Clock Not Set	RTC/Clock Loss	General
CP001:05	Service Report Test	*	*
CP001:06	Service Report Failure to Communicate	Reporting Failure	General
CP001:07	Phone Line Fault	Phone Line Lost	General
CP001:08	Auxiliary Failure	Power Fault	General
CP001:09	Bell 1 Cut/Tamper	Bell/PGM Fault	General
CP001:10	Bell 2 Cut/Tamper	Bell/PGM Fault	General
CP001:11	Bell 1 Cut/Tamper	Bell/PGM Fault	General
CP001:12	Bell 2 Cut/Tamper	Bell/PGM Fault	General
CP001:13	Module Communication	Module Loss	System
CP001:14	Module Network Security	Module Security	System
CP001:15	Expansion Device Missing	Hardware Fault	System
CP001:16	Communication Port 1 Fault	Hardware Fault	System
CP001:17	Communication Port 2 Fault	Hardware Fault	System
CP001:18	Ethernet Hardware Fault	Hardware Fault	System
CP001:19	Ethernet Link Lost	Hardware Fault	System
CP001:20	DVAC Line Fault/Polling Error	Hardware Fault	System
CP001:21	ModBUS Communication Fault	Hardware Fault	System
CP001:22	Protege System Remote Access	Hardware Fault	System
CP001:23	Installer Logged In	Hardware Fault	System
CP001:24	Service 1 Stopped	Hardware Fault	System
CP001:25	Service 2 Stopped	Hardware Fault	System
CP001:26	Service 3 Stopped	Hardware Fault	System
CP001:27	Service 4 Stopped	Hardware Fault	System
CP001:28	Reserved	*	*
CP001:64	Reserved	*	*

7 Programmable Outputs

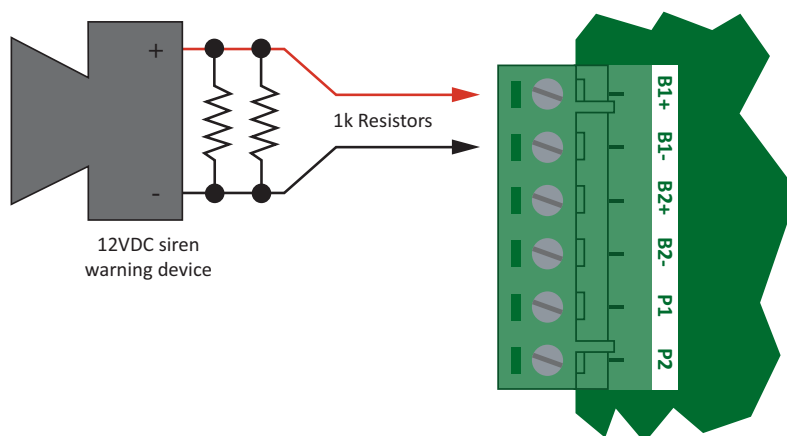
The Controller has 8 programmable outputs (PGMs). The PGMs are used to activate sirens, bells, warning devices, control lighting and doors. The first 2 PGMs on the Controller have special hardware designs that allows them to monitor for fault conditions and are ideally suited to driving sirens and warning devices.

7.1 Bell/Siren PGM Outputs

The + and - terminals of Bell 1 (PGM1 CP001:01) and Bell 2 (PGM2 CP001:02) are used to power bells, sirens or any devices that require a steady voltage output. The bell outputs supply 12VDC upon alarm and support one 30-watt siren. The bell output uses a electronically fused circuit and automatically shuts down under fault conditions.



Not investigated by UL/ULC for Local Burglary applications



Bell Siren PGM 1/2 Connection

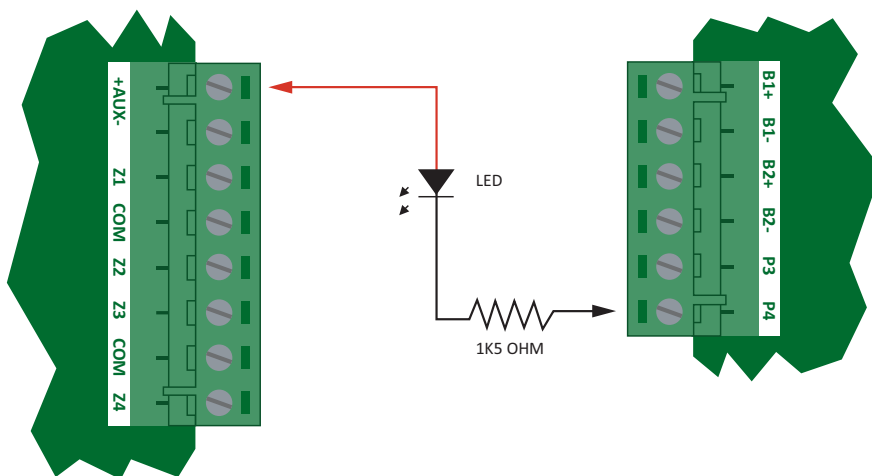
If the load on the bell terminals returns to normal, the Controller reinstates power to the bell terminals on the next transition of the output.



- When the bell output is not used, the appropriate trouble zone will be activated (refer to the section on Trouble Zones (see page 26)). This can be avoided by connecting a 1K resistor (provided in the accessory bag) across the bell output. If the bell is not being used for another function, and the trouble zone is not programmed in the system, a resistor is not required.
- Connecting a Piezo siren may result in a dull noise being emitted. This is caused by residual current from the monitoring circuit. To prevent this occurring, connect 2 1K resistors in parallel.

7.2 PGM 3/4 Outputs

The PGM outputs 3 (PGM3 CP001:03) and 4 (PGM4 CP001:04) on the Controller are open collector outputs and switch to 0V. The PGMs can be used to activate relays, sounders and lights.



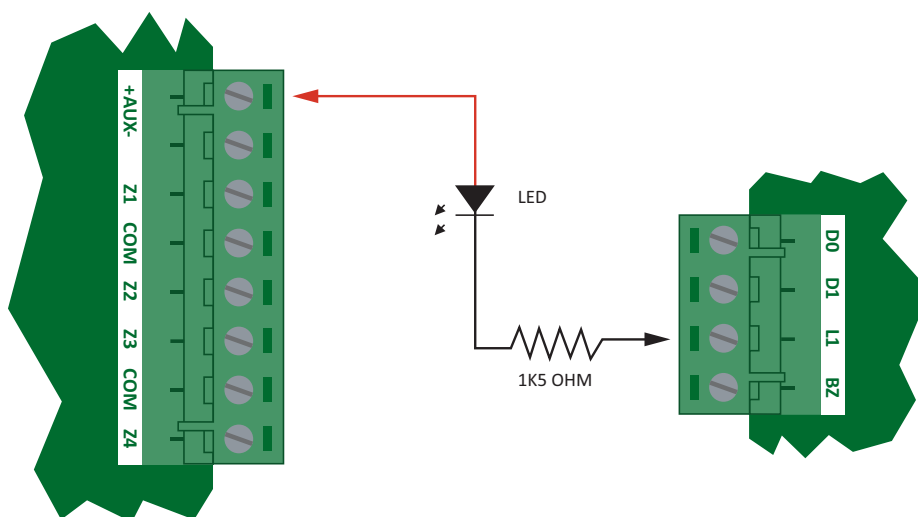
Open Collector PGM 3/4 Connection



Warning: The PGM 3 and 4 outputs can switch to a maximum capacity of 50mA. Exceeding this amount will damage the PGM output.

7.3 Reader PGMs

If readers are not attached to the reader ports then the Reader 1, L1 and BZ and the Reader 2, L1 and BZ outputs can be used as general purpose PGMs. These can be controlled by assigning the RDxxxGreen R1, RDxxx Beeper R1, RDxxxGreen R2 and RDxxx Beeper R2 PGMs of whichever reader module has been configured as the onboard reader module.

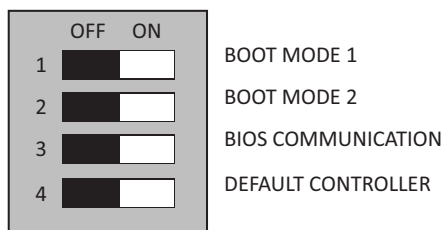


Reader PGMs

8 Hardware Configuration

8.1 Configuration Switch

The Controller uses a 4 way dual inline dip switch located in the centre of the PCB board. This switch is used to configure the boot up and power on settings for the Controller. Each of the switch positions performs a different function. For normal operation, all switches shall be in the off position.



Configuration Switch

Switch	Switch	Function
1	2	Power Up Boot Mode
OFF	OFF	Normal Operation
ON	OFF	BOOT Loader
OFF	ON	BIOS Utility
ON	ON	Reserved Do Not Set

Switch	Switch	Function
3	-	IP Address Configuration
OFF	-	Programmed IP Configuration
ON	-	IP will be set to 192.168.111.222 while this switch remains on. Allows the connection and review of the programmed IP address or the modification to another setting.

Switch	Switch	Function
4	-	System Default
OFF	-	Normal Operation
ON	-	Factory Default Protege Controller

8.2 Defaulting a Controller

The Controller can be set back to factory default using the following procedures. This resets all internal data and event information.

Step 1

Remove power from the controller by disconnecting the AC and battery supply.

Step 2

Turn ON configuration dip switch 4.

Step 3

Power up the Controller by turning on the AC supply.

Step 4

Turn OFF configuration dip switch 4 once the Controller is indicating normal status by flashing the green status indicator. The system will now be defaulted with all programming and settings returned to factory configuration.



Defaulting the Controller does not reset the IP address. To reset an IP address, refer to the details on the Configuration Switch (see page 29).

9 LED Indicators

The Controller includes extensive diagnostic indicators that can aid the installer in diagnosing faults and conditions. In some cases an indicator may have multiple meanings depending on the status indicator display.

9.1 Status LED

The Status indicator is located in the centre of the PCB and indicates the status of the Controller. If the Controller is operating normally the LED will indicate this by flashing at 1 second intervals.

9.2 Fault Indicator

The Fault indicator is located in the centre of the PCB. During normal operation the fault indicator is off. Flashing on will indicate that the Controller is operating in firmware update mode and requires firmware to be downloaded.

9.3 Charge/Test Indicator

The Charge/Test indicator serves two functions. It indicates that a battery test is in progress and also that battery charging is being performed. When AC is present, the battery charging current will be indicated by a varying intensity level on this indicator. This indicator will also illuminate when a battery test is in progress by illuminating brightly for 30 seconds every 10 minutes. The battery test period is a programmable option in the Controller system options.

This LED is identified by the text **CHARGE/TEST**. This indicator does not function when AC is not present.

9.4 Auxiliary OK Indicators

Auxiliary voltage is supplied to the AUX1 and AUX2 outputs through two separate auxiliary fuses. If auxiliary supplies are normal, both the **AUX1 OK** and **AUX2 OK** indicators will be illuminated.

9.5 AC OK Indicator

When a valid AC input is provided to the Controller the **AC OK** indicator will illuminate.

9.6 5V Isolated Power Indicator

The module communicates using an isolated RS-485 interface for optimal performance and this requires an isolated supply on the N+ and N- terminals of the module network interface. When a valid supply is input, the **5V ISO** indicator will illuminate.

9.7 Bell 1/Bell 2 Indicators

The Bell 1/Bell 2 indicators show the status of the bell output and the over current or circuit fault conditions.

Bell Status	Description
OFF	Bell is connected, the output is OFF
ON	Bell is ON
Two Flashes	Bell is ON, the circuit is in over current protection
Three Flashes	Bell is OFF, the circuit to the siren/bell is cut, damaged or tampered

9.8 Network RX/TX Indicators

The Receive and Transmit Data indicators are located on the right side of the PCB beside the communication interface and below the modem circuitry. The indicator shows when the Controller is transmitting and receiving information from the module communications interface and is identified by the text **RX** and **TX**.

9.9 Ethernet Link Indicator

The Ethernet Link indicator is located next to the ethernet connector and is labeled **LINK ACT**. It will be on when the ethernet connection has a valid link with a hub, switch, or is directly connected to a personal computer. If the link indicator is off the ethernet cable is not connected.

The Link Act indicator will flash for a period of 600 milliseconds when the ethernet interface receives or sends a valid frame.

9.10 100Mb Indicator

The 100Mb indicator is located next to the ethernet connector and is labeled **100**. It will be on when the network communication has been successfully negotiated to operate at 100Mbps.

9.11 R1/R2 Data Indicators

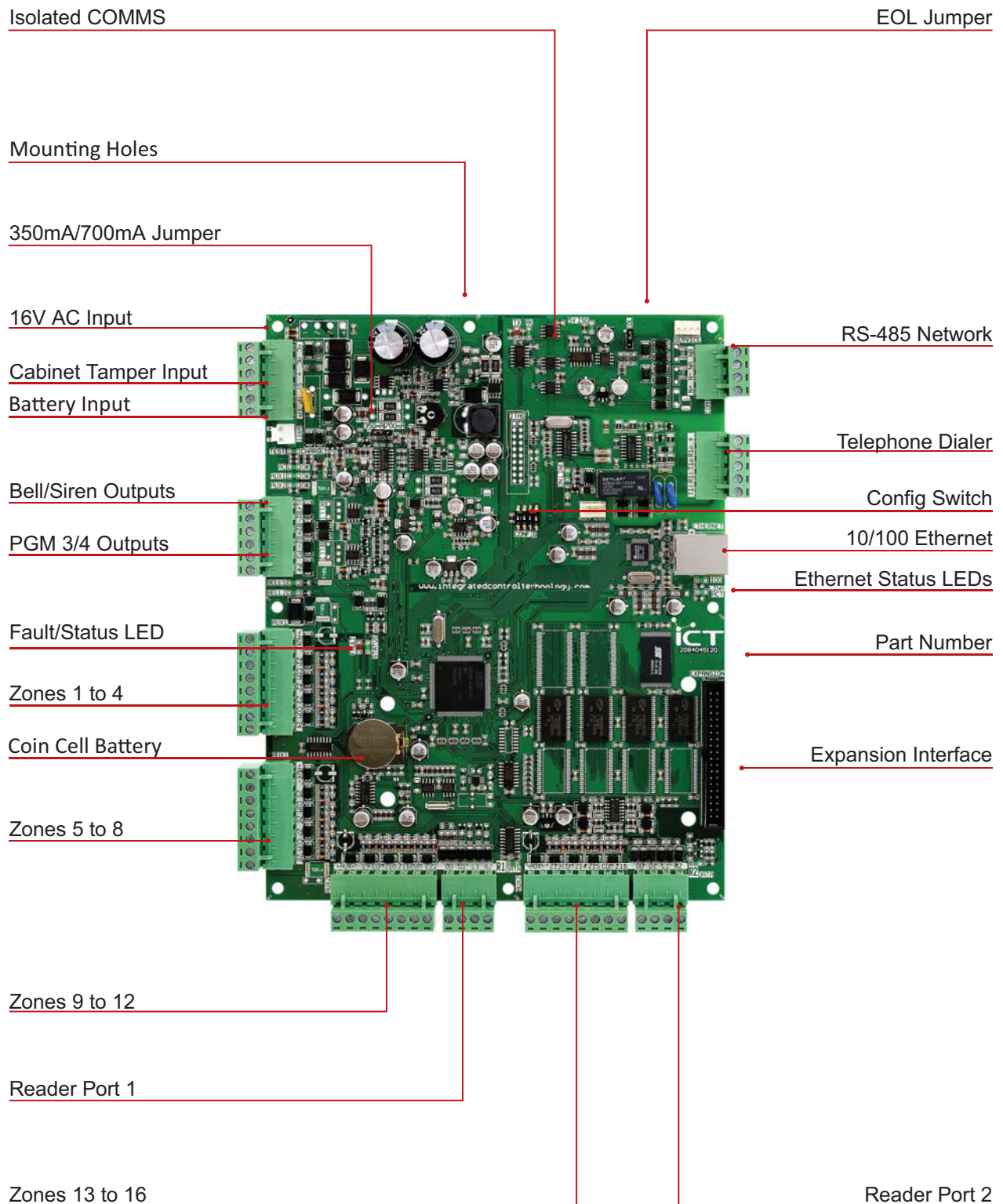
The R1/R2 Data indicators are located above the Reader 1 and Reader 2 connection terminals. A short flash (<250 milliseconds) on the Data indicator will show that data was received but was not in the correct format. A long flash (>1 second) indicates that the unit has read the data and the format was correct.

9.12 Online Indicator

The Online indicator is located near the center of the PCB and is labeled **ONLINE**. The Online indicator shows when the modem has control of the telephone line.

10 Mechanical Diagram

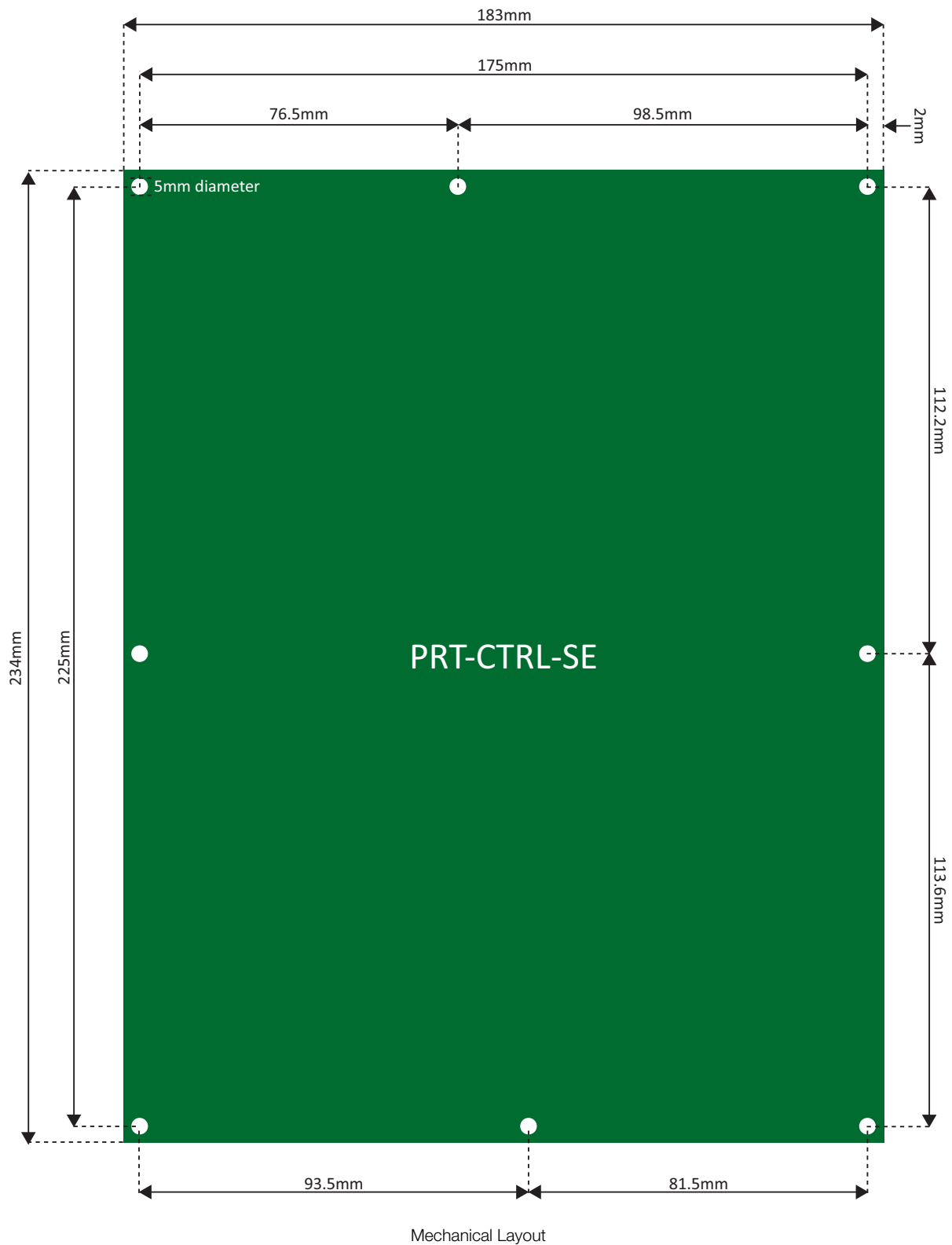
The mechanical diagram shown below outlines the essential details needed to help ensure the correct installation of the Protege Controller.



Mechanical Diagram

11 Mechanical Layout

The mechanical layout shown below outlines the essential details needed to help ensure the correct installation of the Protege Controller.



12 System Capacities

The Protege Controller can be profiled to allow a comprehensive solution that allows optimal performance to be achieved in any installation.

	Standard	Access	Elevator	School	Storage	Automation	Apartment
Users	2000	10000	2000	2000	500	2000	2000
User Names	2000	2000	0	2000	500	2000	2000
Events	2000	4000	2000	4000	4000	1000	2000
Areas	32	32	64	64	128	64	248
Doors	16	128	64	16	16	64	4
Keypad Modules	32	16	8	8	8	32	48
Analog Expanders	8	8	8	8	8	16	8
Zone Expanders	16	8	4	32	64	8	4
Reader Expanders	8	64	32	16	8	32	4
Output Expanders	8	8	8	8	32	8	2
Zone Inputs	464	720	368	688	624	528	1104
Trouble Zone Inputs	704	1408	800	768	832	1088	2224
PGM Outputs	420	772	468	452	772	612	1108
PGM Groups	128	128	28	28	248	128	128
Area Groups	32	32	64	64	248	64	248
Menu Groups	16	16	16	16	16	16	16
Door Groups	128	248	28	32	16	16	16
Keypad Groups	32	16	8	8	8	8	8
Access Levels	128	248	248	32	248	64	16
Zone Types	128	128	32	28	248	64	16
Door Types	8	8	8	8	8	8	4
Services	8	8	8	8	4	8	4
Phone Numbers	16	16	16	16	8	8	8
Schedules	128	248	48	28	64	32	32
Holidays	32	32	32	32	32	32	8
Daylight Saving Adjustment Settings	1	1	1	1	1	1	1
Automation Points	32	32	32	32	16	248	8
Panel Configuration Information	1	1	1	1	1	1	1
Area Names	32	32	64	64	128	64	248
Access Level Names	128	248	48	32	248	64	16
Zone Type Names	64	64	32	28	248	16	16
Zone Names	464	720	68	88	1136	28	1104
Home Names	16	8	16	16	16	16	16
Door Names	16	128	16	16	16	4	4
Door Type Names	8	8	8	8	8	4	4
Area Group Names	64	32	64	64	248	248	248
Menu Group Names	16	16	16	16	16	16	16
Keypad Group Names	8	8	8	8	8	4	4
Phone Number Names	8	8	8	8	8	8	8
Schedule Names	64	248	32	32	64	32	32
Door Group Names	16	248	16	16	16	4	4
Floor Group Names	32	32	28	16	16	16	4
PGM Names	420	16	16	16	16	16	4

	Standard	Access	Elevator	School	Storage	Automation	Apartment
Floor Names	128	128	28	0	0	0	0
Elevator Names	8	8	8	16	8	0	0
Elevator Floor Groups	32	32	28	16	8	0	0
Elevator Cars	8	8	16	8	8	8	0
Elevator Floor	1024	1024	48	24	1024	1024	0
Programmable Function	64	64	32	32	128	128	0
Elevator Car Groups	8	8	16	8	8	8	0
Elevator Car Group Names	8	8	16	8	8	8	0
Variable	248	248	248	248	248	248	248
Bit variable	248	248	248	248	248	248	248
Door Schedules	0	0	0	0	0	0	0
Floor Schedules	0	0	0	0	0	0	0



The Elevator profile has not been evaluated by UL/ULC.

13 Technical Specifications

The following specifications are important and vital to the correct operation of the Protege Controller. Failure to adhere to the specifications will result in any warranty or guarantee that was provided becoming null and void.

Integrated Control Technology continually strives to increase the performance of its products. As a result these specifications may change without notice. We recommend consulting the ICT website (<http://www.incontrol.co.nz>) for the latest documentation and product information.

Operating Voltage	16 to 16.5VAC secondary (via transformer)
Operating AC Input Current	3.3A @ 16VAC when Total Combined Current = 2.5A 2.2A @ 16.5VAC when Total Combined Current = 1.7A
Operating Current	120mA (Typical)
Total Combined Current	1.7A (Max) using a 37/40VA transformer 2.5A (Max) Using a 60VA or greater transformer Electronically limited at 2.5A
AUX1/AUX2 DC Outputs	11.0V-12.3V, 1.0A (Typical) Electronic Shutdown at 1.85A
B1/B2 DC Outputs (Continuous)	11.0V-12.3V, 8 Ohm 30W Siren or 1.1A (Maximum)
B1/B2 DC Outputs (Inrush)	1500mA
Battery Charging	350mA/700mA
Battery Low	11.2VDC
Battery Restore	12.5VDC
Electronic Disconnection	9.4VDC
Communication (Ethernet)	1 10/100Mbps Ethernet Communication Link
Communication (Serial)	1 Isolated RS-485 Communication Interface Port 12VDC @ 28mA. (Input)
Communication (Modem)	1 2400bps Modem Communication
Readers (Standard Mode)	2 Wiegand or clock data readers providing one Entry/Exit Door or two Entry/Exit only Doors.
Readers (Multiplex-reader Mode)	4 Wiegand Readers (connected in Multiplex Reader mode) providing any combination of Entry or Exit for two Doors.
Zone Inputs (System Zones)	16 High Security Monitored Zone Inputs
Tamper Input	Dedicated Hardware Tamper Input
PGM Outputs	6 50mA (Max) Open Collector Output for reader LED and beeper or general functions.
Status Output	1 50mA (Max) Open Collector Output
Operating Temperature	0°-49°C (32° - 122°F)
Storage Temperature	-10°- 85°C (14° - 185°F)
Humidity	0%-93% non condensing, indoor use only (relative humidity)
Dimensions (L x W x H)	234 x 183 x 35mm (9.21 x 7.20 x 1.37")
Weight	376g (13.26oz)



Warning: The total combined current must not exceed a maximum of 1.7A if a 37/40VA transformer is used, or a maximum of 2.5A if a 60VA or greater transformer is used. The transformer can be damaged if the total combined current exceeds its capability.

The total combined current is the sum of the operating current, charging current, DC Outputs (AUX1 and AUX 2) and Lock - Bell/Siren (B1 and B2) Outputs.

Please refer to the following Current and Validations Examples for more details.



The isolated communications interface on the Controller uses full galvanic isolation to prevent ground loop noise and cross phase ground differential. This is a very important feature of the product family and the correct connection of power to this isolated section will ensure the correct operation of the communications network.

13.1 Current and Validation Example 1

The example shown below refers to the specifications needed to help ensure the correct installation of the Protege Controller. Specifications have to be validated to ensure that individual maximum currents and total combined current are not exceeded.

Using a 40VA Transformer

External Devices Connected to Panel

8 x EDGE PIR Motion Detectors (Z1 to Z8) connected on AUX1 Outputs

1 x 30W Siren (1.1A Maximum @ 13.8VDC)

Current Consumption

Total Combined Current Available	1.7A (1700mA)
Operating Current	120mA (Typical)
Battery Charging	350mA (Standard Current Charging)
DC Output (AUX1)	8 x EDGE PIR Motion Detectors @ 15mA each (Total 120mA)
Siren on B1 Output	1.1A (1100mA)
Total Consumption	1.69A (1690mA)

Validation

Is the total DC Output (AUX1) current less or equal to 1.0A (1000mA)?	Yes, it is 120mA	✓
Is B1 current output less or equal to 1.1A (1100mA)?	Yes, it is 1.1A (1100mA)	✓
Is the total combined current less or equal to 1.7A (1700mA)?	Yes, it is 1.69A (1690mA)	✓

13.2 Current and Validation Example 2

The example shown below refers to the specifications needed to help ensure the correct installation of the Protege Controller. Specifications have to be validated to ensure that individual maximum currents and total combined current are not exceeded.

Using a 80VA Transformer

External Devices Connected to Panel
2 x PRX-NPROX Nano Prox Card Readers (120mA @ 13.8VDC) connected on AUX2 Outputs
2 x Electric Locking Devices (520mA @ 13.8VDC)

Current Consumption	
Total Combined Current Available	2.5A (2500mA)
Operating Current	120mA (Typical)
Battery Charging	700mA (High Current Charging)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
B1 Output	Electric Locking Device (520mA @ 13.8VDC)
B2 Output	Electric Locking Device (520mA @ 13.8VDC)
Total Consumption	2.1A (2100mA)

Validation		
Is the total DC Output (AUX2) current less or equal to 1.0A (1000mA)?	Yes, it is 240mA	✓
Is B1 current output less or equal to 1.1A (1100mA)?	Yes, it is 520mA	✓
Is B2 current output less or equal to 1.1A (1100mA)?	Yes, it is 520mA	✓
Is the total combined current less or equal to 2.5A (2500mA)?	Yes, it is 2.1A (2100mA)	✓

13.3 Maximum Total Output Current: UL and ULC Installations

The following table describes the maximum total output current available for standby operation using an external VRLA battery in order to comply with UL and ULC standby requirements.

Application	Maximum Total Output Current Available	Charging Jumper Setting	Transformer	Battery Rating
UL 294 and CAN/ULC-S319, 4hr backup	1200mA	350mA or 700mA	40VA/100VA	1 x 12VDC, 7Ah
	1400mA	350mA or 700mA	100VA	
	2000mA	350mA or 700mA	100VA	2 x 12VDC, 7Ah = 14Ah
CAN/ULC-S304 24hr backup	100mA	700mA	40VA/100VA	1 x 12VDC, 7Ah
	400mA	700mA	40VA/100VA	2 x 12VDC, 7Ah = 14Ah
CAN/ULC-S559 24hr backup	100mA	700mA	100VA	1 x 12VDC, 7Ah
	400mA	700mA	100VA	2 x 12VDC, 7Ah = 14Ah
UL 1610, UL 1635 24hr backup	100mA	700mA	40VA/100VA	1 x 12VDC, 7Ah
	400mA	700mA	40VA/100VA	2 x 12VDC, 7Ah = 14Ah
UL 1610, UL 1635 72hr backup	60mA	350mA or 700mA	40VA/100VA	2 x 12VDC, 7Ah = 14Ah



The *Maximum Total Output Current Available* is the **maximum** current that can be supplied to the AUX1/AUX2 DC Outputs and B1/B2 DC Outputs. These are the maximum current values to ensure compliancy with the standby requirements.

13.4 Current and Validation (UL Installation) Example 1

Using a 40VA Transformer and 14Ah Battery

UL1610, UL1635 (72 hr standby capacity)

External Devices Connected to Panel

1 x PRT-KLCD Protege Alphanumeric LCD Keypad (30mA Typical)

Standby Current Consumption

Total Output Current Available	60mA
DC Output (AUX1)	PRT-KLCD Protege Alphanumeric LCD Keypad (30mA Typical)
Total Output Current Consumption	30mA

Current Consumption

Total Combined Current Available	1.7A (1700mA)
Operating Current	120mA (Typical)
Battery Charging	350mA (Standard Current Charging)
DC Output (AUX1)	PRT-KLCD Protege Alphanumeric LCD Keypad (30mA Typical)
Total Consumption	0.5A (500mA)

Validation

In order to comply with UL1610 and UL1635 72 hr standby requirements, is the Total Output Current less or equal to 60mA?	Yes, it is 30mA	☒
Is the DC Output (AUX1) current less or equal to 1.0A (1000mA)?	Yes, it is 30mA	☒
Is the total combined current less or equal to 1.7A (1700mA)?	Yes, it is 0.5A (500mA)	☒

13.5 Current and Validation (UL Installation) Example 2

Using a 100VA Transformer and 14Ah Battery

UL294 (4 hr standby capacity)

External Devices Connected to Panel

2 x PRX-NPROX Nano Prox Card Readers (120mA @ 13.8VDC) connected on AUX2 Outputs

2 x Electric Locking Devices (520mA @ 13.8VDC)

Standby Current Consumption

Total Output Current Available	2A (2000mA)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
B1 Output	Electric Locking Device (520mA @ 13.8VDC)
B2 Output	Electric Locking Device (520mA @ 13.8VDC)
Total Output Current Consumption	1.28A (1280mA)

Current Consumption

Total Combined Current Available	2.5A (2500mA)
Operating Current	120mA (Typical)
Battery Charging	700mA (High Current Charging)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
DC Output (AUX2)	PRX-NPROX Nano Prox Card Reader (120mA @ 13.8VDC)
B1 Output	Electric Locking Device (520mA @ 13.8VDC)
B2 Output	Electric Locking Device (520mA @ 13.8VDC)
Total Consumption	2.1A (2100mA)

Validation

In order to comply with UL294 4 hr standby requirements, is the Total Output Current less or equal to 2A?	Yes, it is 1.28A (1280mA)	✓
Is the DC Output current (AUX2) less or equal to 1.0A (1000mA)?	Yes, it is 240mA	✓
Is B1 current output less or equal to 1.1A (1100mA)?	Yes, it is 520mA	✓
Is B2 current output less or equal to 1.1A (1100mA)?	Yes, it is 520mA	✓
Is the total combined current less or equal to 2.5A (2500mA)?	Yes, it is 2.1A (2100mA)	✓

14 UL and ULC Installation Requirements



Only UL / ULC listed compatible products are intended to be connected to a UL / ULC listed control system.

14.1 Central Station Signal Receiver Compatibility List

- IP Receiver via Ethernet Port : Integrated Control Technology ArmorIP Internet Monitoring Receiver. Serial interface to be used with SIMS II version 1.3x central station automation system software and compatible receiving equipment as indicted in the SIMS II Appendix E UL Supplement.
- CID Receiver via Onboard Modem: Any UL and ULC listed receiver that uses the Contact ID protocol.

14.2 ULC Compliance Requirements

CAN/ULC-S304-06

- **Auto Arming**

Control units that support auto arming shall provide an audible signal throughout the protected area not less than 10 min prior to the auto arming taking place. The control unit shall allow authorized users to cancel the auto arming sequence and transmit such cancelation to the signal receiving center with the identification of the authorized user that canceled the action.

The following options must be enabled in the Protege System when using the Auto Arming feature. When the defer warning time is programmed to 10 minutes, the PGM group will be activated 10 minutes before the system performs the Auto Arming in the associated Area.

- The **Defer PGM or PGM Group** must be programmed. Please refer to the section *Defer PGM or PGM Group* in the Protege System Controller Reference Manual (227-4045-500) for programming instructions. For details on modifying the Defer PGM or PGM Group, refer to the section *PGM and PGM Group Entry* in the Protege System Controller Reference Manual (227-4045-500).
- The **Defer Warning Time** must be programmed to not less than 10 minutes. Please refer to the section *Defer Arming Warning Time* in the Protege System Controller Reference Manual (227-4045-500).
- The **Defer Automatic Arming** arming option must be enabled. Please refer to the section *Area Special Options* in the Protege System Controller Reference Manual (227-4045-500)

- **Double EOL Zone Configuration**

Only double EOL Zone Configuration shall be used. Please refer to the section *Inputs* (see page 24) of this manual and the section *Zone Special Options* in the Protege System Controller Reference Manual (227-4045-500).

- **Multiplex System and Poll Time**

The PRT-CTRL-SE is compatible with the Integrated Control Technology ArmorIP Internet Monitoring Receiver. Poll Time must be set to 40 seconds and the Grace Time must be set to 20 seconds.

In the Protege System, the reporting service must be configured to 40 seconds. The following options are required for the service selected as Report IP type:

- The **Enable Poll Events** option must be enabled. Please refer to option 5 in the section *Reporting Options* in the Protege System Controller Reference Manual (227-4045-500)
- The **Poll Time** must be programmed to 40 seconds. Please refer to the *Poll Time* section in the Protege System Controller Reference Manual (227-4045-500)

- **Central Station Signal Receiver**

The common equipment of each signal receiving center control unit shall be limited to 1000 alarm systems.

- **Number of attempts**

In the event of unsuccessful communication, a digital alarm communicator transmitter shall make a minimum of 5 and a maximum of 10 attempts. Where the maximum number of attempts to complete the

sequence is reached, an indication of the failure shall be made at the premises.

In the Protege System, the reporting service selected as Contact ID must have the number of attempts programmed to 5 attempts. The following options are required:

- The **Dialing Attempts** option must be programmed. Please refer to the section *Dialing Attempts* in the Protege System Controller Reference Manual (227-4045-500)

- **Check-In Time**

DACT communication channel check-in time is not to exceed 24 hrs.

Trouble Zone Service Test Report

- Test report time must be programmed. Please refer to the section *Miscellaneous Options* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 5 (Option 5 - Generate Trouble Zone Test Report Restore) must be enabled. Please refer to the section *Panel Options Generate Trouble Zone Test Report Restore* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 2 (Option 2 - Generate Test Report by Time of Day) must be enable. Please refer to the section *Panel Options* in the Protege System Controller Reference Manual (227-4045-500)

- **Primary Communication Channel**

The first attempt to send a status change signal shall utilize the primary communication channel.

The Report IP and Contact ID services must be programmed and enabled within the Protege System, and the CID service must be set as the backup service. The following options are required:

- The **Contact ID Reporting Service** must be enabled and the **Service Mode** must be configured to start with the operating system.

Refer to the section *Contact ID Reporting Service* in the Protege System Controller Reference Manual (227-4045-500)

- The **Report IP Service** must be enabled as the primary communication channel and the **Service Mode** must be configured to start with the operating system. The **Reporting Protocol** must be set to ArmorIP, and the **Backup Service** must be configured to use the Contact ID Service.

Refer to the section *Report IP Service* in the Protege System Controller Reference Manual (227-4045-500).

- All ULC S304 P3 applications must transmit signals simultaneously over both the Contact ID Reporting Service and the Report IP Service. This will occur automatically with the above programming.

- **Status Change Signal**

An attempt to send a status change signal shall utilize both primary and secondary communication channels.

- **Local Annunciation if Signal Reporting Failure**

Failure of the primary communication channel or secondary communication channel shall result in a trouble signal being transmitted to the signal receiving center within 240 seconds of the detection of the fault.

Failure of either communication channel shall be annunciated locally within 180 seconds of the fault.

The following options must be enabled in the Protege System:

- The **Monitor Phone Service** must be enabled, and the **Telephone Line Monitoring** option (Miscellaneous option 1) must be selected. Refer to the section *Monitor Phone Service* in the Protege System Controller Reference Manual (227-4045-500)
- The area **Trouble Area** must be armed. Refer to the section *Regular Arming* in the Protege System Controller Reference Manual (227-4045-500)

- **Network and Domain Access**

Neither the subscriber control unit nor the signal receiving center receiver shall be susceptible to security breaches in general-purpose operating systems.

Network access policies should be set to restrict unauthorized network access and "spoofing" or "denial of service" attacks.

- **Ethernet Connections**

All Ethernet network connections shall be installed within the same room as the equipment.

- **Encryption**

For active communications channel security, encryption shall be enabled at all times.

The ArmorIP-E (UDP) protocol must be used and the Encryption Type must be set to AES-256.

The following options must be enabled for the the Report IP service in the Protege System.

- The **Reporting Protocol** must be set to ArmorIP (UDP) Encrypted. The AES key must be set as specified by monitoring station.

Refer to the section *Report IP Service* in the Protege System Controller Reference Manual (227-4045-500).

- **Server Configuration**

Where a server is employed for control over network addressing, encryption or re-transmission, such shall be designed to remain in the "on state" at all times.

Communicators are not suitable for active communication channel security and medium or high risk applications unless such can be "on line" at all times, have a minimum 128 bit encryption scheme, have encryption enabled, network and domain security implemented.

Network access policies shall be set to restrict unauthorized network access and "spoofing" or "denial of service" attacks.

- **Internet Service Provider (ISP)**

The Internet Service Provider (ISP) providing service shall meet the following requirements:

- redundant servers/systems
- back-up power
- routers with firewalls enabled and
- methods to identify and protect against "Denial of Service" attacks (i.e. via "spoofing")

- **Information Technology Equipment, Products or Components of Products**

Products or components of products, which perform communications functions only, shall comply with the requirements applicable to communications equipment as specified in CAN/CSA-C22.2 No. 60950-1, Information Technology Equipment Safety - Part 1: General Requirements. Where network interfaces, such as the following, are internal to the subscriber control unit or receiver, compliance to CAN/CSA-C22.2 No. 60950-1 is adequate. Such components include, but are not limited to:

- A) Hubs;
- B) Routers;
- C) Network interface devices;
- D) Third party communications service providers;
- E) Digital subscriber line (DSL) modems; and
- F) Cable modems.

- **BELL / SIREN**

Bell / Siren for 30 min standby requirements shall comply with CAN/ULC-S303.

- **Backup Power Requirements**

Power for network equipment such as hubs, switchers, routers, servers, modems, etc., shall be backed up or powered by an un-interruptable power supply (UPS), stand-by battery or the control unit, capable of facilitating 24 h standby, compliant with Clauses 16.1.2 and 16.4.1 of CAN/ULC-S304-06.

For communications equipment employed at the protected premises or signal receiving centre and intended to facilitate packet switched communications, as defined in CAN/ULC-S304, 24 h back-up power is required.

- **Compromise Attempt Events**

ArmorIP automatically detects the reception of any invalid packet on the programmed port as a potential system **compromise attempt**. Each compromise attempt sends a notification to the receiver, and logs a Compromise Attempt event in the Events Tab.

The event is sent with the following details:

- **Account Code** as defined in the Account settings on the Ademco 685 tab of the Preferences Menu
- **Event Code** 0x163
- **Group Code** as defined in the Details settings on the Ademco 685 tab of the Preferences Menu
- **Point Code** as defined in the Details settings on the Ademco 685 tab of the Preferences Menu

Refer to the section *Ademco 685* in the ArmorIP Internet Monitoring Application User's Manual (227-5500-000).

For UL and ULC installations the Central Station Receiving software must have the Contact ID details as specified, programmed for the **Compromise Attempt** event.

- **Telephone Lightning Surge Protector**

Telephone lightning surge protector manufactured by L-com Inc (Model HGLN-D1-DT) shall be connected inline to the telephone dialer T1i and R1i. Refer to the PRT-CTRL-SE wiring diagram (see page 9) of this manual.

- **Hardwire Transformer Marcus M4758CT**

When installed with the power supply manufactured by Marcus, Model M4758CT:

- The Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
- The Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

CAN/ULC-S319-05

- The Models PRT-CTRL-SE and PRT-RDI2-PCB are intended to be mounted within the Model CAB-LARGE-UL enclosure, installed inside the protected premise, and are CAN/ULC-S319 Listed for Class I applications only
- Exit devices and wiring must be installed within the protected area.
- System must be installed with at least one PRX-NPROX proximity card reader. For CAN/ULC-S319 Listed installations, the PRX-NPROX is the only reader that may be used.
- For the Models PRT-CTRL-SE and PRT-RDI2-PCB, all RS485 and reader terminal connections must be made using shielded, grounded cable.
- The Model PRX-NPROX must be connected with shielded, grounded cable.
- Fail secure locking mechanism shall only be installed where allowed by the local authority having jurisdiction (AHJ) and shall not impair the operation of panic hardware and emergency egress.
- If fire resistance is required for door assembly, portal locking device(s) must be evaluated to ULC-S533 and CAN/ULC-S104.
- Must be installed with CAN/ULC-S319 Listed portal locking device(s) for ULC installations.
- When installed with the power supply manufactured by Marcus, Model M4758CT:
 - The Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
 - The Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

CAN/ULC-S559-04

- **Signal Reporting**

Any fault of an active communication system shall be annunciated and recorded at the signal receiving center within 180 s of the occurrence of the fault.

The Report IP and Contact ID services must be programmed and enabled within the Protege System. The following options are required:

- The **Contact ID Reporting Service** must be enabled and the **Service Mode** must be configured to start with the operating system.
Refer to the section *Contact ID Reporting Service* in the Protege System Controller Reference Manual (227-4045-500)
- The **Report IP Service** must be enabled as the primary communication channel, the **Service Mode** must be configured to start with the operating system, and the **Reporting Protocol** must be set to ArmorIP.
Refer to the section *Report IP Service* in the Protege System Controller Reference Manual (227-4045-500).
- All ULC S559 applications must transmit signals simultaneously over both the Contact ID Reporting Service and the Report IP Service. This will occur automatically with the above programming.
- The area **Trouble Area** must be armed. Refer to the section *Regular Arming* in the Protege System Controller Reference Manual (227-4045-500)

In the ArmorIP Internet Monitoring Software the **Poll Time** must be set to 40 seconds and the **Grace Time** must be set to 20 seconds. Please refer to the section *Poll/Grace Time* in the ArmorIP Internet Monitoring Application User Manual (227-5500-000).

- **Central Station Signal Receiver**

The maximum number of signal transmitting units connected to any transmission channel shall conform to the manufacturer's recommendations. The ArmorIP Receiver supports up to 10000 simultaneous connections.

Please refer to the section *Internet Connections Requirements* in the ArmorIP Receiver Installation Manual (227-5510-000) for further details.

- **Number of attempts**

In the event of unsuccessful communication, a digital alarm communicator transmitter shall make a minimum of 5 and a maximum of 10 attempts. Where the maximum number of attempts to complete the sequence is reached, an indication of the failure shall be made at the premises.

In the Protege System, the reporting service selected as Contact ID must have the number of attempts programmed to 5 attempts. The following options are required:

- The **Dialing Attempts** option must be programmed. Please refer to the section *Dialing Attempts* in the Protege System Controller Reference Manual (227-4045-500)

- **Check-In Time**

DACT communication channel check-in time is not to exceed 24 hrs.

Trouble Zone Service Test Report

- Test report time must be programmed. Please refer to the section *Miscellaneous Options* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 5 (Option 5 - Generate Trouble Zone Test Report Restore) must be enabled. Please refer to the section *Panel Options Generate Trouble Zone Test Report Restore* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 2 (Option 2 - Generate Test Report by Time of Day) must be enable. Please refer to the section *Panel Options* in the Protege System Controller Reference Manual (227-4045-500)

- **Ethernet Connections**

All Ethernet network connections shall be installed within the same room as the equipment.

- **Telephone Lightning Surge Protector**

Telephone lightning surge protector manufactured by L-com Inc (Model HGLN-D1-DT) shall be connected inline to the telephone dialer T1i and R1i. Refer to the PRT-CTRL-SE wiring diagram (see page 9) of this manual.

- **Hardwire Transformer Marcus M4758CT**

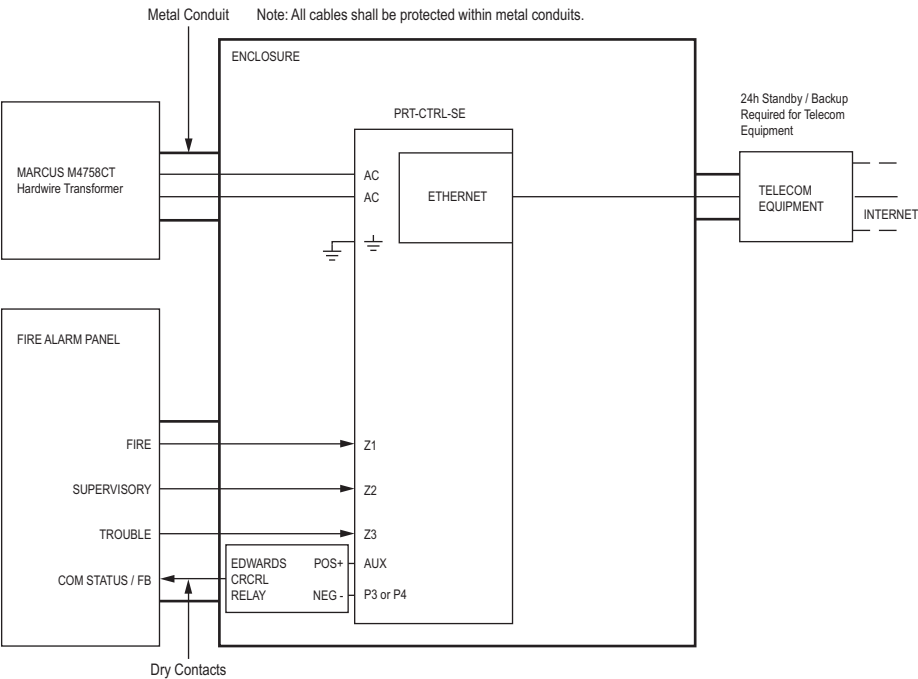
When installed with the power supply manufactured by Marcus, Model M4758CT:

- The Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
- The Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

- **Fire Zones**

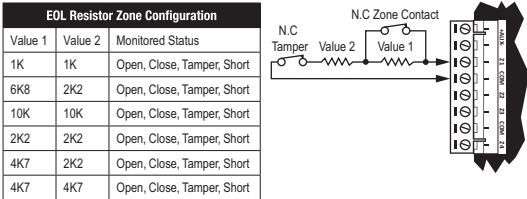
Fires zones shall be separated from burglar zones through area partitioning.

CAN/ULC-S559
PRT-CTRL-SE
ACTIVE COMMUNICATION



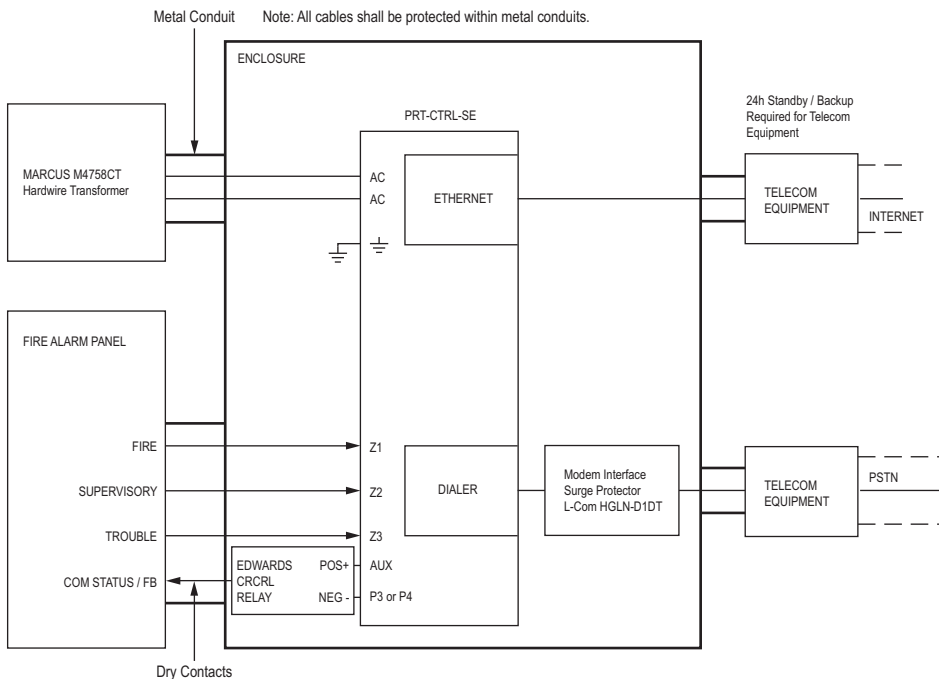
- * If installation requires Fire Alarm Panel local supervision, a ULC S527 listed relay module (such as the EDWARDS CRCRL RELAY) must be used to trigger input zone on fire alarm control panel. The relay module must be able to meet supervision requirements of the input zone or be mounted within 18m of the fire alarm control unit in conduit.
- * Fire zones shall be separated from burglar zones through area partitioning.
- * Fire zones Z1-Z3 shall be used exclusively for fire monitoring and cannot be programmed to activate bell outputs (B1/B2)

Typical Zone Circuits



- * EOL resistor must be installed at the Fire Alarm Control Panel Output.

CAN/ULC-S559
PRT-CTRL-SE
PASSIVE COMMUNICATION



- * If installation requires Fire Alarm Panel local supervision, a ULC S527 listed relay module (such as the EDWARDS CRCRL RELAY) must be used to trigger input zone on fire alarm control panel. The relay module must be able to meet supervision requirements of the input zone or be mounted within 18m of the fire alarm control unit in conduit.
- * Fire zones shall be separated from burglar zones through area partitioning.
- * Fire zones Z1-Z3 shall be used exclusively for fire monitoring and cannot be programmed to activate bell outputs (B1/B2)

Typical Zone Circuits

EOL Resistor Zone Configuration		
Value 1	Value 2	Monitored Status
1K	1K	Open, Close, Tamper, Short
6K8	2K2	Open, Close, Tamper, Short
10K	10K	Open, Close, Tamper, Short
2K2	2K2	Open, Close, Tamper, Short
4K7	2K2	Open, Close, Tamper, Short
4K7	4K7	Open, Close, Tamper, Short

* EOL resistor must be installed at the Fire Alarm Control Panel Output.

Fire Zone Inputs and Outputs

Fire Zone inputs must be programmed as follow:

- FACP Fire Alarm Signal zone type must be programmed as Fire
- Supervisory Trouble Signal zone type must be programmed as 24 Hr Silent
- Trouble Signal zone type must be programmed as 24 Hr Silent

Please refer to the section *Zone Type Alarm Options* in the Protege System Controller Reference Manual (227-4045-500)

- All fire zone inputs must be placed into an area and this area must be armed. Please refer to the section *Area* in the Protege System Controller Reference Manual (227-4045-500)
- COM Status
FACP system with a COM STATUS input must have this input connected to the P3 or P4 output of the panel and the selected output must be programmed as the Report OK PGM in the Contact ID Service. Please refer to section *Report OK PGM Option* in the Protege System Controller Reference Manual (227-4045-500).
- Fire zones Z1-Z3 shall be used exclusively for fire monitoring and cannot be programmed to activate bell outputs (B1/B2).

14.3 UL Compliance Requirements

UL1610

- A local alarm sounding device, alarm housing, and control unit shall comply with the mercantile requirements in the Standard for Police Station Connected Burglar Alarm Units and Systems, UL365.
- Exit and entry delay must not exceed 60 seconds. To program the entry and exit delay time, please refer to the section *Area* in the Protege System Controller Reference Manual (227-4045-500).
- All Ethernet network connections shall be installed within the same room as the equipment.
- Signals between the premises control unit and the receiving equipment, when not carried by wireless means, shall be protected by the following method:

- Onboard modem telco connection must be dedicated to the PRT-CTRL-SE.
- Ethernet connection to the Internet Service Provider (ISP) with a fixed IP Address must be dedicated to the PRT-CTRL-SE.

- To comply with the dual signal line transmission system requirement, both transmission lines (onboard modem and IP reporting) must be enabled. Signals shall be sent simultaneously to both, Report IP Service and Contact ID Reporting Service.

The Report IP and Contact ID services must be programmed and enabled within the Protege System. The following options are required:

- The **Contact ID Reporting Service** must be enabled and the **Service Mode** must be configured to start with the operating system.

Refer to the section *Contact ID Reporting Service* in the Protege System Controller Reference Manual (227-4045-500)

- The **Report IP Service** must be enabled as the primary communication channel, the **Service Mode** must be configured to start with the operating system, and the **Reporting Protocol** must be set to ArmorIP.

Refer to the section *Report IP Service* in the Protege System Controller Reference Manual (227-4045-500).

- When more than one means of signal transmission is used, loss of communication with the receiving system shall be annunciated at the receiver within 200 seconds. If a fault is detected on any of the signal transmission means, at least one of the signal transmission channels shall send a signal to the central-station to report the fault within 200 seconds.

The Report IP and Contact ID services must be programmed and enabled within the Protege System.

The PRT-CTRL-SE is compatible with the Integrated Control Technology ArmorIP Internet Monitoring Receiver. Poll Time must be set to 40 seconds and the Grace Time must be set to 20 seconds.

In the Protege System, the reporting service must be configured to 40 seconds. The following options are required for the service selected as Report IP type:

- The **Enable Poll Events** option must be enabled. Please refer to option 5 in the section *Reporting Options* in the Protege System Controller Reference Manual (227-4045-500)
- The **Poll Time** must be programmed to 40 seconds. Please refer to the *Poll Time* section in the Protege System Controller Reference Manual (227-4045-500)

- The **Contact ID Reporting Service** must be enabled and the **Service Mode** must be configured to start with the operating system.

Refer to the section *Contact ID Reporting Service* in the Protege System Controller Reference Manual (227-4045-500)

- The **Report IP Service** must be enabled as the primary communication channel, the **Service Mode** must be configured to start with the operating system, and the **Reporting Protocol** must be set to ArmorIP.

Refer to the section *Report IP Service* in the Protege System Controller Reference Manual (227-4045-500).

- The **Trouble Zone Area** must be armed in 24h mode. Refer to the section *24HR Enabling* in the Protege System Controller Reference Manual (227-4045-500).

In the event of unsuccessful communication, a digital alarm communicator transmitter shall make a minimum of 5 and a maximum of 10 attempts. Where the maximum number of attempts to complete the sequence is reached, an indication of the failure shall be made at the premises.

In the Protege System, the reporting service selected as Contact ID must have the number of attempts programmed to 5 attempts. The following options are required:

- The **Dialing Attempts** option must be programmed. Please refer to the section *Dialing Attempts* in the Protege System Controller Reference Manual (227-4045-500)
- DACT communication channel check-in time is not to exceed 24 hrs.

Trouble Zone Service Test Report

- Test report time must be programmed. Please refer to the section *Miscellaneous Options* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 5 (Option 5 - Generate Trouble Zone Test Report Restore) must be enabled. Please refer to the section *Panel Options Generate Trouble Zone Test Report Restore* in the Protege System Controller Reference Manual (227-4045-500)
- The Panel Option 2 (Option 2 - Generate Test Report by Time of Day) must be enable. Please refer to the section *Panel Options* in the Protege System Controller Reference Manual (227-4045-500)
- ArmorIP automatically detects the reception of any invalid packet on the programmed port as a potential system **compromise attempt**. Each compromise attempt sends a notification to the receiver, and logs a Compromise Attempt event in the Events Tab.

The event is sent with the following details:

- **Account Code** as defined in the Account settings on the Ademco 685 tab of the Preferences Menu
- **Event Code** 0x163
- **Group Code** as defined in the Details settings on the Ademco 685 tab of the Preferences Menu
- **Point Code** as defined in the Details settings on the Ademco 685 tab of the Preferences Menu

Refer to the section *Ademco 685* in the ArmorIP Internet Monitoring Application User's Manual (227-5500-000).

For UL and ULC installations the Central Station Receiving software must have the Contact ID details as specified, programmed for the **Compromise Attempt** event.

- The telephone lightning surge protector manufactured by L-com Inc (Model HGLN-D1-DT) shall be connected inline to the telephone dialer T1i and R1i of the PRT-CTRL-SE. Refer to the wiring diagram (see page 9) of the PRT-CTRL-SE Installation Manual (227-4045-001).
- When installed with the power supply manufactured by Marcus, Model M4758CT:
 - The Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
 - The Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

UL294

- The Models PRT-CTRL-SE and PRT-RDI2-PCB are intended to be mounted within the Model CAB-LARGE-UL enclosure, installed inside the protected premise, and are UL 294 Listed for Attack Class I applications only
- Exit devices and wiring must be installed within the protected area.
- System must be installed with at least one PRX-NPROX reader. For UL 294 Listed installations, the PRX-NPROX, HID Model ProxPoint (6005BGB00) and iClass R40 (6120CKN0000) readers may be used.
- For the Models PRT-CTRL-SE and PRT-RDI2-PCB, all RS485 and reader terminal connections must be made using shielded, grounded cable.
- The Model PRX-NPROX must be connected with shielded, grounded cable.
- Fail secure locking mechanism shall only be installed where allowed by the local authority having jurisdiction (AHJ) and shall not impair the operation of panic hardware and emergency egress.
- If fire resistance is required for door assembly, portal locking device(s) must be evaluated to ULC-S533 and CAN/ULC-S104.

- Must be installed with UL 1034 Listed electronic locks for UL installations.
- When installed with the power supply manufactured by Marcus, Model M4758CT for UL 294 installations, the Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of the Model CAB-LARGE-UL enclosure in order to provide green AC power on indication.
- When installed with the power supply manufactured by Marcus, Model M4758CT:
 - The Digital Security Controls (DSC) Model ULC-LA power indicator light assembly (Installation Instruction No. 29001877 R0) must be installed within a conduit knockout of either the ICT Model CAB-LARGE-UL or Bosch Model D8108A enclosure in order to provide green AC power on indication.
 - The Littelfuse Part No. 150322 fuseholder and Littelfuse Part No. 0312005 5A, 3AG fast-acting fuse must be installed in-line to the Models PRT-CTRL-SE, PRT-ZX16-PCB, and PRT-RDI2-PCB.

15 FCC Compliance Statements

FCC PART 15, WARNINGS: INFORMATION TO USER

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Changes or modifications not authorized by the party responsible for compliance could void the user's authority to operate this product.

This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT INFORMATION

This equipment complies with Part 68 of the FCC Rules and the requirements adopted by the ACTA. Inside the cover of this equipment is a label that contains, among other information, a product identifier in the format US: AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

FCC REGISTRATION NUMBER: US:48DAL00BPRTCTRL

RINGER EQUIVALENCE NUMBER: 0.0

USOC Jack: RJ-31X

Telephone Connection Requirements

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See this document for details.

Ringer Equivalence Number (REN)

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US: AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

Incidence of Harm

If this equipment PRT-CTRL-SE Integrated System Controller causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Changes in Telephone Company Equipment or Facilities

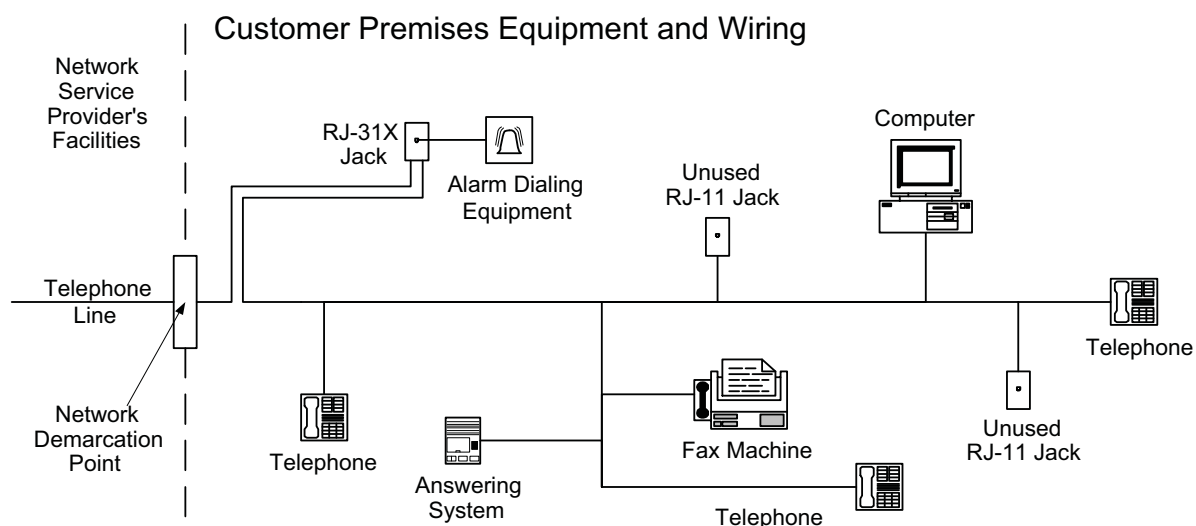
The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Equipment Maintenance Facility

If trouble is experienced with this equipment PRT-CTRL-SE Integrated System Controller, for repair or warranty information, please contact Integrated Control Technology c/o 150 W 9th Ave, Denver, CO 80204. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved. This equipment is of a type that is not intended to be repaired by the end user.

Additional Information

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information. Alarm dialing equipment must be able to seize the telephone line and place a call in an emergency situation. It must be able to do this even if other equipment (telephone, answering system, computer modem, etc.) already has the telephone line in use. To do so, alarm dialing equipment must be connected to a properly installed RJ-31X jack that is electrically in series with and ahead of all other equipment attached to the same telephone line. Proper installation is depicted in the figure below. If you have any questions concerning these instructions, you should consult your telephone company or a qualified installer about installing the RJ-31X jack and alarm dialing equipment for you.



16 Industry Canada Statement

This class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This product meets the applicable Industry Canada technical specifications. The Ringer Equivalence Number (REN) for this terminal equipment is 0.0. The Ringer Equivalence Number is an indication of the maximum number of devices allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed five.

L'indice d'équivalence de la sonnerie (IES) du présent matériel est de 0.0. Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada. L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

PRT-CTRL-SE REGISTRATION NUMBER IC: 10012A-PRTCTRL

PRT-CTRL-SE NUMÉRO D'ENREGISTREMENT IC: 10012A-PRTCTRL

17 Ordering Information

Please use the following product codes when placing an order for the Protege SE Integrated System Controller.

- PRT-CTRL-SE

Manuals and additional literature are available on the ICT Website (<http://www.incontrol.co.nz>) under the Support section.

18 Warranty

Integrated Control Technology (ICT) warrants its products to be free from defects in materials and workmanship under normal use for a period of one year. Except as specifically stated herein, all express or implied warranties whatsoever, statutory or otherwise, including without limitation, any implied warranty of merchantability and fitness for a particular purpose, are expressly excluded. ICT does not install or connect the products and because the products may be used in conjunction with products not manufactured by ICT, ICT cannot guarantee the performance of the security system. ICT's obligation and liability under this warranty is expressly limited to repairing or replacing, at ICT's option, any product not meeting the specifications. In no event shall ICT be liable to the buyer or any other person for any loss or damages whether direct or indirect or consequential or incidental, including without limitation, any damages for lost profits, stolen goods, or claims by any other party caused by defective goods or otherwise arising from the improper, incorrect or otherwise faulty installation or use of the merchandise sold.

19 Contact

Integrated Control Technology welcomes all feedback.

Please visit our website (<http://www.incontrol.co.nz>) or use the contact information below.

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Designers & manufacturers of integrated electronic access control, security & automation products.

Designed & manufactured by Integrated Control Technology Limited.

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